NOVEMBER 9, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING

9 Ways to Faster contract termination

. . . details on page 80

✓ THE FULL LUNCH PAIL
Labor's 1954 Theme, p. 69

✓ SHORTCUTS TO CLEANER METALS
Giving Dirt the Brushoff, p. 112

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When this man needs ALUMINUM

FOR IMMEDIATE DELIVERY

"When I need aluminum, I need it in a hurry. That's one reason I call KORHUMEL."

And he gets it in a hurry! Overnight, if necessary. Prompt, snag-free delivery is one of the cornerstones on which Korhumel was built. You can look forward to the same efficient delivery service when you call Korhumel. You can look forward, too, to saving valuable time and money, eliminating costly delays and meeting production schedules on time every time.

FOR COMPLETE STOCK SELECTION

"My needs vary. We use all sizes, types, gauges and alloys. That's another reason I call KORHUMEL."

It's a call well made, for Korhumel carries the most complete stocks available. Whatever quantity, size, type, temper, gauge or alloy of aluminum you need, you're pretty certain to find it in stock. Coils, sheet, rods and bars; each or all is quickly available. And don't overlook Korhumel's unique extra services. We will slit coils of all sizes or shear straight lengths to your most demanding specifications.

he calls KORHUMEL

why don't YOU?

FOR IMPORTANT SAVINGS

"We can't afford to carry large inventories. And that's just one more good reason why I call KORHUMEL."

And a mighty good reason, sir! Low inventory investment is just one of the savings you realize when you call Korhumel. You save valuable storage space for other purposes, cut costs on handling and lose less on damage and obsolescence. In addition, accounting costs are trimmed and you can get along with less insurance. Over a period of time, these multiple advantages add up to important savings.

STEEL
- Cold and Hot Rolled Strip and Sheet
- Spring Steel, Tempered and Annealed
- Feeler Gauge
- Round Edge Flat Wire
- Shim Steel
- Electro Galvanized
- Electrical Sheets
- Tin Plate
- Cold Finished Bars
- Tubing, Seamless, Welded
- Rigidtex Stainless
- Hydraulic Tubing

ALUMINUM
- Strip and Sheet
- Coils
- Straight Lengths
- Bars

PHOSPHOR BRONZE
- Coils and Flats

SERVICES
- Slitting
- Shearing
- Edge Rolling
- Bright Annealing
- Cold Rolling
- Ungerer Roller Leveling

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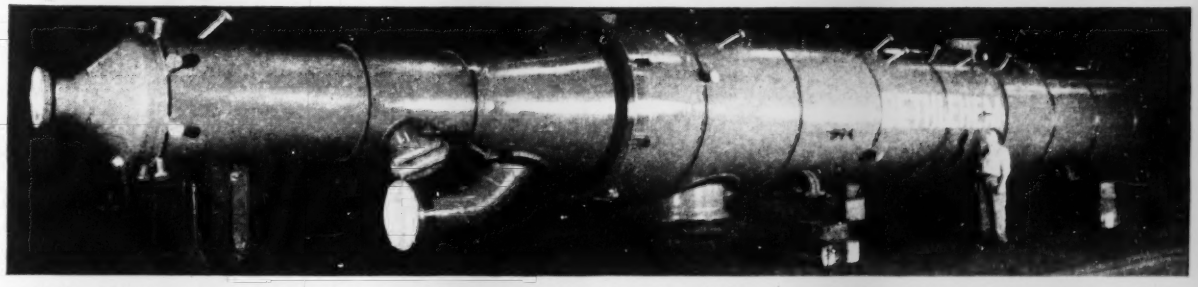
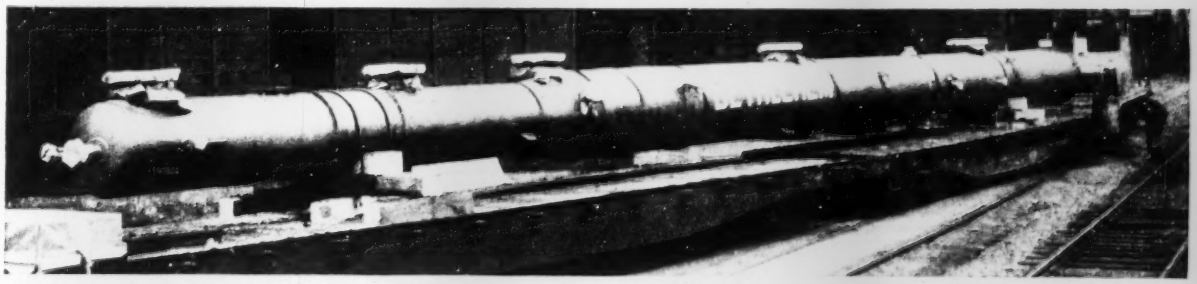
1943 10 YEARS OF WAREHOUSE PROGRESS BUILT ON SERVICE **1953**

Tall Towers Made By Welding

FRACTIONATING TOWER — This 82-ft tower for an oil refinery weighs about 31 tons and is 8 ft in diameter. Its shell is made up of ½-in. steel plate — welded carefully to meet the vessel code of API and ASME.



REACTOR TOWER — Welded of both 7/16-in. and 5/16-in. steel plate, this 76-ft vertical tower weighs about 24 tons. Within the shell are some rather complex "innards." It's built to API-ASME vessel code for an oil-refinery process.



BUBBLE TOWER — Slightly more than 95 ft long, this chemical process tower tips the scales at nearly 30 tons. Tested hydrostatically to 756 psi, it's made of welded plate in both 1 1/16-in. and 7/8-in. thicknesses.

These big towers are typical of the complex types of equipment that are fabricated by our Weldment Shop — not just for chemical and petroleum processes but for builders and users of all kinds of machinery.

Bases, frames, assemblies, vessels, presses, large diameter pipe work, autoclaves, kilns, tanks — all of these are economically made by welding together steel plates of varying thicknesses. Steel forgings, castings or structural shapes are often incorporated.

Here are some good reasons for looking into Bethlehem Weldments:

ECONOMY — Excess weight is eliminated, but at no sacrifice of rigidity or strength. This reduction in weight usually means a real saving in the total cost of machines or assemblies.

FREEDOM OF DESIGN — There's absolute freedom of design because the steel plate can be bent, pressed or shaped prior to welding without affecting its physical structure. Either forgings, castings or structural shapes can be incorporated where desirable.

VERSATILITY — All sizes and shapes of steel can be welded together from blueprints. Weldments can be simple or complex parts, sections of assemblies, or finished machines.

★ ★ ★

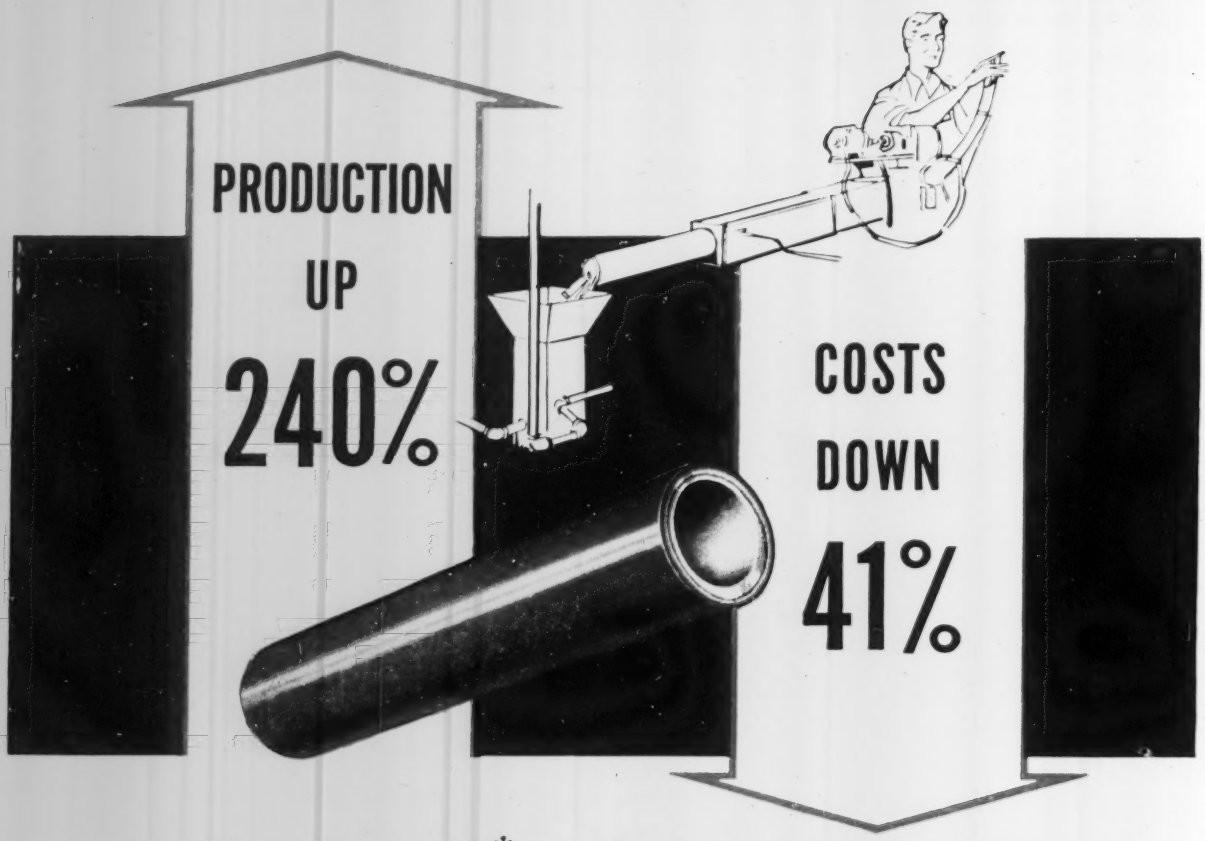
Be sure to get our price the next time you need large machinery parts, frames or assemblies. You may be pleasantly surprised at the savings that are possible with weldments made in our well-equipped shops. Get in touch with the nearest Bethlehem sales office for full details.

BETHLEHEM STEEL COMPANY
BETHLEHEM, PA.

On the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. Export Distributor: Bethlehem Steel Export Corporation

BETHLEHEM STEEL

BETHLEHEM WELDMENTS



with TOCCO* Induction Heating

Whether you're interested in upping production or downing costs—or both—it pays to investigate TOCCO Induction Heating if you heat-treat, anneal, braze, solder, forge or melt ferrous or non-ferrous metal parts.

PRODUCTION UP—When Thompson Products Ltd., St. Catharines, Ontario switched from conventional methods to TOCCO Induction Hardening of their automotive wrist pins, production rose from 500 to 1200 per hour.

COSTS DOWN—While production jumped, costs fell from $5.46 per hundred parts to $3.23—a savings of more than 2c per pin or $26.76 per hour on the hardening operation alone.

OTHER ADVANTAGES—Additional savings result from elimination of hauling wrist pins to and from the heat-treat department. Cool, clean TOCCO fits right in the production line, next to related operations—takes only ¼ the space of the pusher-type furnace previously used.

In Canada or the United States TOCCO engineers are glad to survey your operations for similar cost-cutting results—no obligation, of course.

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Please send copy of "Typical Results of TOCCO Induction Hardening and Heat Treating".

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Position_____

Company_____

Address_____

City_____ Zone____ State_____

OSBORN

Takes off metal whiskers 6 times faster

...IMPROVES QUALITY

Your Problem may be far removed from the deburring of electric shaver heads . . . but, if it involves cleaning or finishing of any kind, the answer may be found quickly with the help of your **O**sborn **B**rushing **A**nalyst.

Here, he helped convert a hand operation to automatic power brushing that greatly improved the product and increased output.

The job: To remove fine burrs at the slots of shaver heads and blend the surface junctures at the ends. The **OBA** helped develop the application of two Osborn brushes to an automatic "push-button" operation. Shaver heads are mounted in clamp fixtures on a rotating table. One brush runs clockwise and the other counter-clockwise, producing perfectly smooth, uniform surfaces. One operator turns out more than 1000 pieces per hour, compared to an output of about 150 per manhour formerly.

An Osborn Brushing Method can benefit *your* cleaning and finishing operations. Call your . . . **OBA** or write *The Osborn Manufacturing Company, Dept. G12, 5401 Hamilton Ave., Cleveland 14, Ohio.*

FREE: *New booklet on deburring with Osborn Power Brushing. Write for your copy.*

Osborn Brushes

OSBORN BRUSHING METHODS, POWER, MAINTENANCE AND PAINT BRUSHES AND FOUNDRY MOLDING MACHINES

THERE'S A TOUCH OF TENNESSEE IN MODERN CASTINGS

TENNESSEE's famous Diamond "D" pig iron is used from coast to coast in the production of special castings in which unusual strength and elasticity are required. It is low in phosphorus, manganese and sulphur, high in carbon and is machine cast.

Diamond "D" pig iron is recommended for the production of "Ductile" or "Nodular" iron castings as well as White Iron and electric and acid furnace steel castings.

TENNESSEE also ships Ferromanganese and Ferrosilicon in briquettes and lump form to foundries throughout the nation. These and many other essential ingredients have won for TENNESSEE the name of an industry serving all industry.

TENNESSEE
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NASHVILLE, TENNESSEE

Producers of FUELS • METALLURGICAL PRODUCTS • TENSULATE BUILDING PRODUCTS • AROMATIC CHEMICALS WOOD CHEMICALS • AGRICULTURAL CHEMICALS

This Week in Metalworking

STEEL

Vol. 133 No. 19 November 9, 1953

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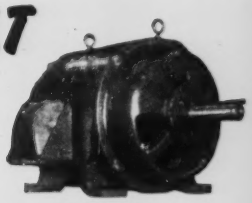
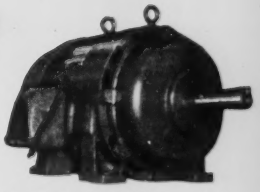
RELIANCE *Precision-Built* MOTORS

BUILT



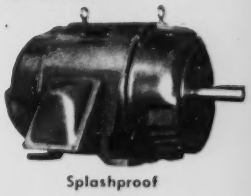
Protected Open

FOR



Totally-enclosed, Fan-cooled

RUGGED



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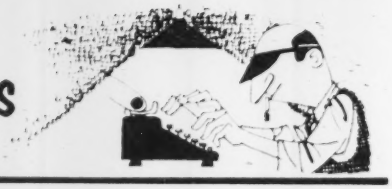
behind the scenes



Metalworking's Destiny

Our mood this week has been set by the fact that we've been browsing and ran across STEEL's editorial of January 7, 1952, titled "Metalworking's Destiny."

You may well remember this particular piece, because its impact was felt throughout the metalworking industry, and its message was carried to the floor of the House of Representatives and later printed in the *Congressional Record*.

"Metalworking's Destiny," was a "think piece" in the most literal sense. Its closing paragraphs are certainly worth repeating.

"Should a co-ordinated and constructive program of action be made a fact and it can be made a fact if we make it our business America's future will be great.

"Metalworking industry will double and redouble its productivity. It will contribute to the doubling and redoubling of our standard of living.

"We will solve the problems of dwindling resources through exploration to develop new sources of materials, development of alternate materials, discovery of new materials and better utilization of the materials we now have.

"We will harness the new forms of energy to make them do our will in turning out productive goods.

"We will achieve security through productivity.

"Then we as a nation and as an industry can feel confidence and exhilaration in our strength and once again become conscious of the splendor of our destiny."

We wonder whether the undertones of pessimism being whispered about business in 1954 couldn't be changed by gearing our thoughts and efforts a little higher. Some folks are already doing just that. Let's take a look. . . .

Business Better in '54?

Industrial machinery and supplies distributors think business in 1954 will be better than in 1953.

In a poll taken at the joint regional meeting of the American Supply & Machinery Manufacturers' Association Inc. and the National Industrial Distributors' Association in Washington recently, these folks tipped their collective hats to 1954 and told it to come ahead. Only one of 20 distributors anticipated less business for the first half of '54 as compared with '53; 13 expect things to be about the same, and 6 look forward to an increase, the expected gain averaging 17 per cent.

Two of those 20 see a drop in the second half compared with '53; nine see equally profitable business and nine expect higher sales about 15 per cent higher.

Fifty-nine manufacturers of industrial machinery and supplies also took part in the poll and reported equally optimistic predictions for 1954.

Ripe Market Opportunity

Perhaps you missed an Oct. 26th article in STEEL which reported that industrial equipment is 28 per cent obsolete.

The authority for this information was a survey conducted by the American Society of Tool Engineers. It went on to say that capital equipment manufacturers can look forward to a good replacement market for several years to come if industry does something about the obsolete equipment in industry's own plants.

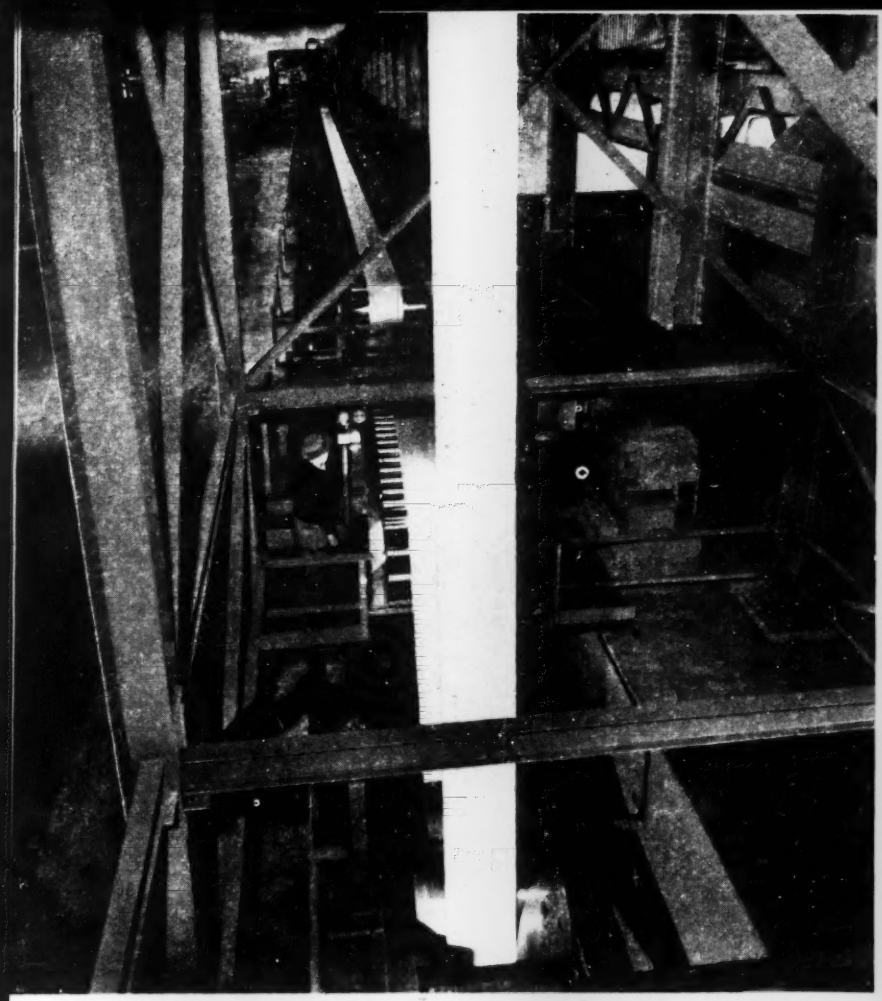
Machining equipment is reported to be 30 per cent obsolete, inspection methods 34 per cent obsolete, production welding equipment 25 per cent obsolete, materials handling equipment 20 per cent obsolete, metalforming processes 28 per cent obsolete and grinding and finishing equipment 23 per cent obsolete.

Here is a replacement market ripe with opportunities for sales. Add to this the expenditures anticipated for added new equipment and you get a pretty picture indeed.

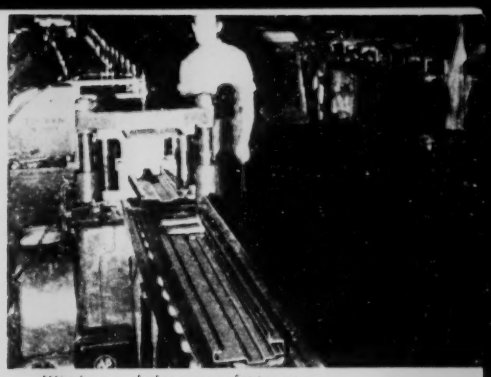
Things look a little brighter already, don't they?

Shrdlu

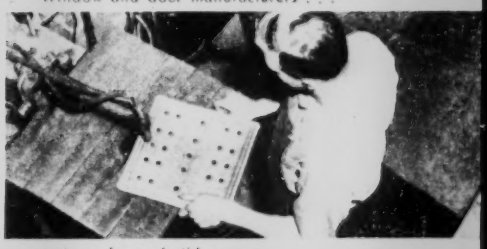
(Metalworking Outlook—Page 61)



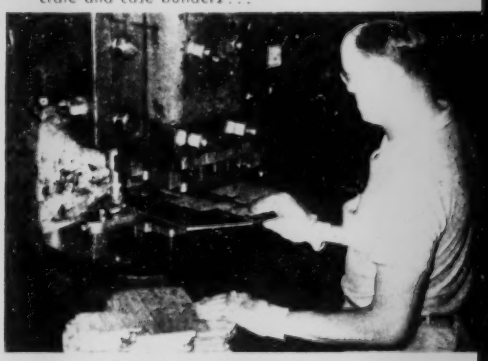
Galvanite* production boosted to aid . . .



Window and door manufacturers . . .



crate and case builders . . .



radio and television makers . . .

Increased use of Galvanite* compels SHARON to up capacity to 50,000 tons a year

The demand for Galvanite* has increased at such a tremendous rate since the close of World War II that expanded facilities at Sharon's Roemer Works for the production of this material were inevitable.

Recently, after many months of design and construction, a special new 50,000 tons per-year line was set into operation, to help satisfy the demand, and to provide better delivery.

Galvanite* is a special process zinc-coated steel that discourages rust, fights the weather, firmly grips paint. It can be formed, or otherwise fabricated, with all the ease of plain steel.

It has been successfully used as a material for window casements, doors, milk crates, suitcase frames, flexible cable, radiator tubing, roof deck, outlet boxes, etc., and quite recently has boomed as an ideal metal for television and radio.

New Galvanite Booklet FREE!

A new Galvanite booklet is available to you with information on this popular special coated metal. Write direct or contact the Sharon office nearest you for YOUR copy.

*Trade name copyrighted by the Sharon Steel Corporation

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Lightweight HELIARC torch

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is WATER-COOLED

for Efficient inert gas welding at LOW COST

You can make high quality welds, quickly and easily, in stainless, aluminum, cast iron, HASTELLOY and MULTIMET alloys—practically all commercial metals—at lower cost with the 300 amp. HEILARC HW-10 water-cooled torch.

You'll find that the improved water-cooling system assures cooler and more effective operation even when the torch is used continuously at the full rated capacity. The cooling water flows through the power cable and torch body down to the water jacket and gas cup. The return flow follows the same route in reverse. All exterior "plumbing" has been eliminated allowing more maneuverability and preventing leakage due to accidental damage. Water-cooling makes lightweight torch construction possible, and because the power cable is also water-cooled, it too, is lightweight and easy to handle.

The HW-10 was designed so that the water passages are accessible and easily cleaned.

Electrodes are easily adjusted on the HW-10. A quarter turn of the torch cap releases the electrode for adjustment or replacement. You need no wrenches or other tools. In addition, electrode stub loss is reduced by placing the water-cooled electrode holder much closer to the arc.

Are you getting the best possible results from your present welding apparatus? Developments in the inert gas welding field have been so great and have come so rapidly that torches over four or five years old are now obsolete. Be sure that you have the highest production at the lowest cost. Modernize with the 300 amp. HEILARC welding torch.

Your local LINDE representative would be happy to give you more detailed information on the HEILARC HW-10.

"Heliarc," "Hastelloy," "Linde," and "Multimet" are registered trade-marks of Union Carbide and Carbon Corporation

Linde

TRADE-MARK

LINDE AIR PRODUCTS COMPANY

A Division of Union Carbide and Carbon Corporation

General Offices: UCC New York 17, N.Y.

In Canada: DOMINION OXYGEN COMPANY, LIMITED, Toronto

There's a *simple* way to solve what appears to be a complex speed reduction problem

Get the proper drive combination that best meets your requirements from the broad LINK-BELT line

YOU'LL find your power transmission costs are lowered several ways when you use Link-Belt enclosed gear drives. First, Link-Belt offers a broad range of types and sizes in helical, herringbone and worm gear designs. You get the *one* reducer best suited to your needs.

In addition, Link-Belt builds a complete line of power transmission machinery. Installation and alignment are simplified because dimensions of Link-Belt chains and sprockets, bearings and couplings are all coordinated. And there's no need to call in another firm for any information or assistance.

This overall integration—plus the long life built into every piece of Link-Belt equipment—guarantees optimum efficiency. Result: lower power consumption and maintenance costs.

Make the nearby Link-Belt sales office or distributor your power transmission headquarters. Nowhere else can you get the great selectivity that assures you of the best in enclosed gear drive applications.

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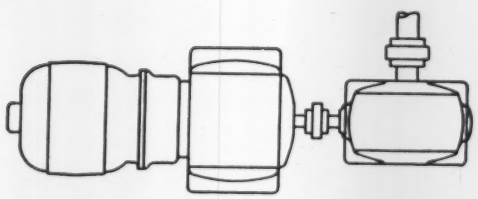
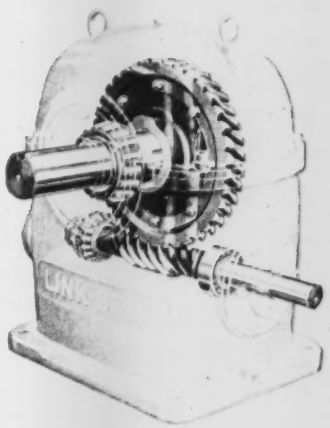
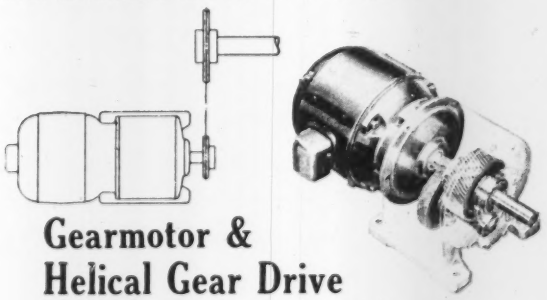
LINK-BELT COMPANY: Plants: Chicago, Indianapolis, Philadelphia, Colmar, Pa., Atlanta, Houston, Minneapolis, San Francisco, Los Angeles, Seattle, Toronto, Springs (South Africa), Sydney (Australia). Sales Offices, Factory Branch Stores and Distributors in Principal Cities.



Worm Gear Drive

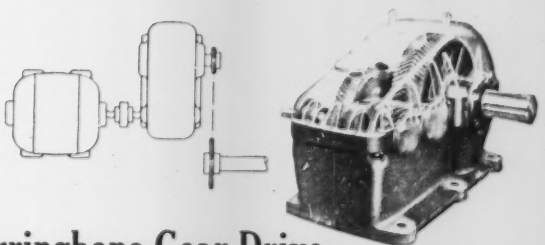
WORM GEAR and P.I.V. variable speed drives are shown direct-coupled. Link-Belt worm gear drives are available in 3.1:1 to 8000:1 reduction ratios—1400 to 123,000 in. lbs. torque—0.22 to 564 output shaft rpm. Ask for Book 2324A.





Gearmotor & Helical Gear Drive

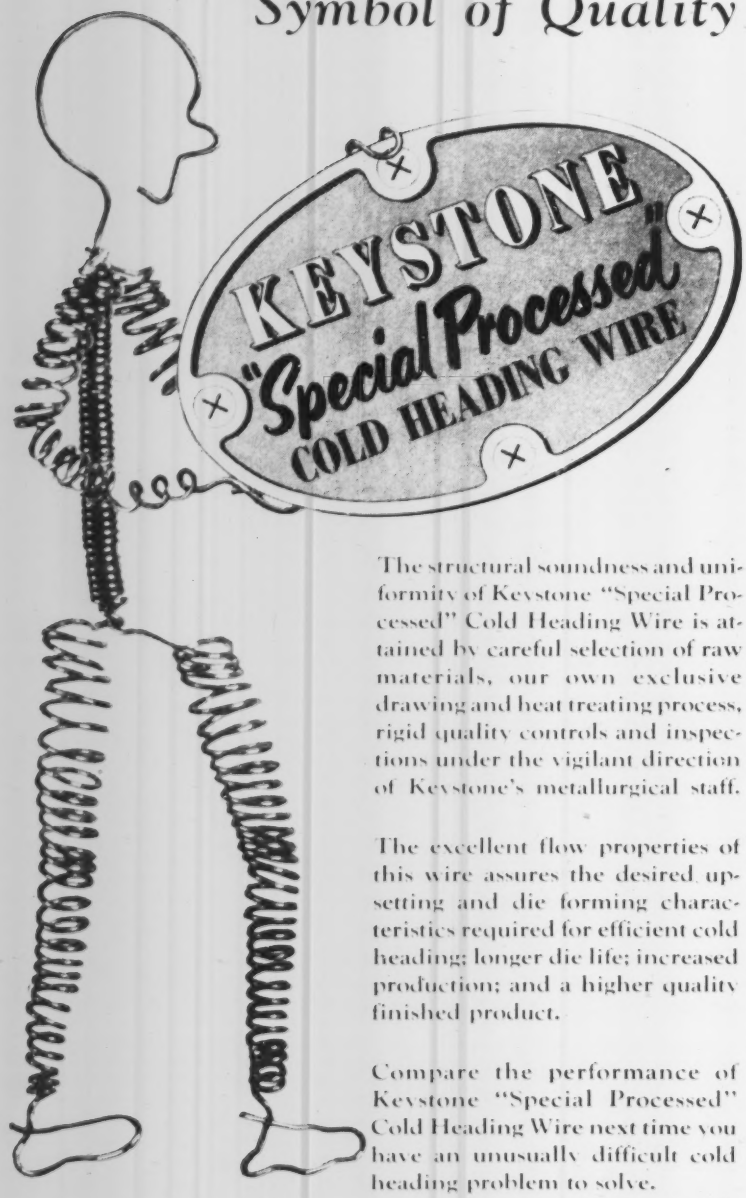
GEARMOTOR is shown with roller chain drive. Link-Belt Helical Gear Drives, Gearmotors and Motogears are available in 6.2:1 to 292:1 reduction ratios—1 to 30 hp—6 to 280 output shaft rpm. Ask for Books 2247 and 2451.



Herringbone Gear Drive

HERRINGBONE GEAR DRIVE is shown connected by flexible coupling to motor and with roller chain takeoff. Link-Belt Herringbone Gear Drives are available in 2.84:1 to 326:1 ratios—0.4 to 2480 hp—2.2 to 623 output shaft rpm. Ask for Book 2519.

The Recognized Symbol of Quality



The structural soundness and uniformity of Keystone "Special Processed" Cold Heading Wire is attained by careful selection of raw materials, our own exclusive drawing and heat treating process, rigid quality controls and inspections under the vigilant direction of Keystone's metallurgical staff.

The excellent flow properties of this wire assures the desired upsetting and die forming characteristics required for efficient cold heading; longer die life; increased production; and a higher quality finished product.

Compare the performance of Keystone "Special Processed" Cold Heading Wire next time you have an unusually difficult cold heading problem to solve.

Keystone Steel & Wire Company
PEORIA 7, ILLINOIS

LETTERS TO THE EDITORS

Areas Welcome Development

The Sept. 14 issue of STEEL featured an excellent two-page story on "Area Development Puts the Welcome Mat Out for Industry" (pp. 66-67), which included a description of the planned program of Wilkes-Barre, Pa., to promote the industrial growth of the Wyoming Valley area.

This is a most interesting and informative article and we would like to have at least ten tearsheets of the story for use by this department.

Andrew J. Sordoni
secretary
Department of Commerce
Commonwealth of Pennsylvania
Harrisburg, Pa.

• *Sent.—ED.*

Controlling Atom Power

In the Mar. 2 issue of STEEL (just to prove that you have protracted tenacity of readership), there is a story on "Atomic Power in Industry" (p. 86). The illustration on p. 89 shows a Foxboro control panel. Is there any chance of our being able to use this picture, with attendant information about it, in our own promotion work?

Paul C. Bunker
advertising manager
Foxboro Co.
Foxboro, Mass.

• *We'll see that you get a glossy print of the photograph.—ED.*

An Old Story Still New

Please mail to this office 12 copies of the article "Uniform Tank Coatings" by R. W. Thraser, originally printed in the Apr. 19, 1948, issue of STEEL.

R. Bissell
Equipment Container Division
Rheem Mfg. Co.
Baltimore

• *Sent.—ED.*

One for Precoated Metals

We would appreciate very much your sending us six additional copies of the Oct. 12 issue of STEEL. There is a very interesting article, "Precoated Metals", on pp. 156-157 of this issue and that is why we would like to have these extra copies. In addition we would like 100 reprints of the article.

J. McCallum
American Nickeloid Co.
Peru, Ill.

• *Sent.—ED.*

Shedding Light on Leasing

I appreciated receiving a copy of your story "Leasing: A Competitive Vita-

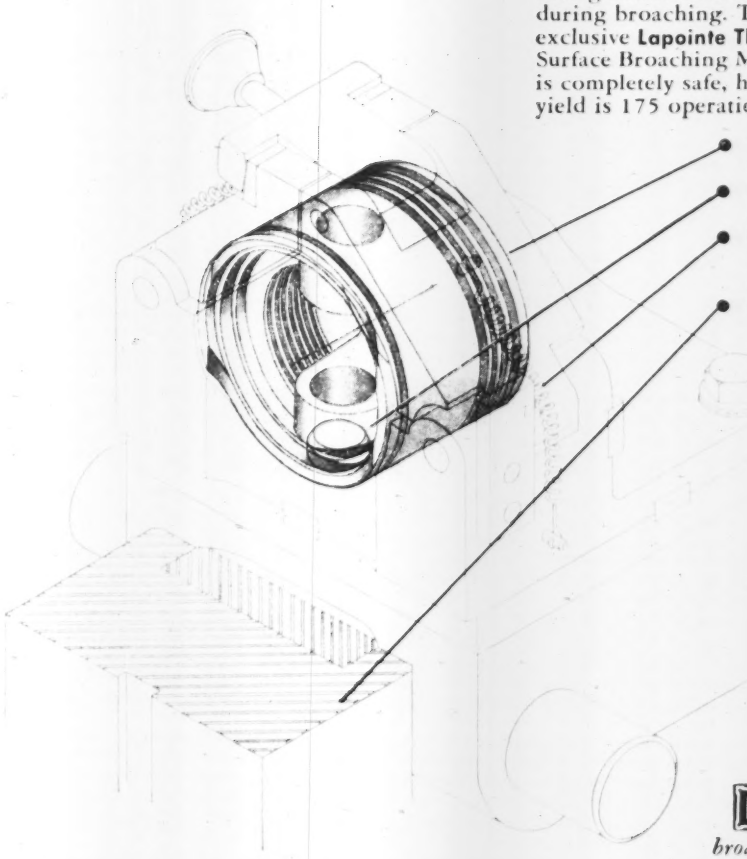
Please turn to page 12

LAPOINTE SURFACE BROACHING

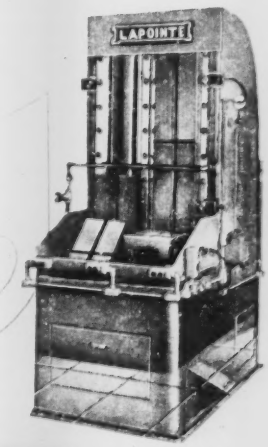
. . . the most economical method of metal removal for high production!

This piston is a good example of what can be done by **LAPOINTE** surface broaching. A "contour cut" is broached crosswise, across the end . . . with the piston firmly held in a fixture of unique Lapointe design.

We call it a shroud. Our engineers developed this quick-acting fixture to encompass the part and prevent distortion during broaching. The work-nest is mounted on the exclusive **Lapointe TIP-DOWN** Fixture, on a 5-ton DRV Surface Broaching Machine with 42-inch stroke. Operation is completely safe, handling of the parts is convenient, yield is 175 operations per hour!



- Other sizes of pistons can be broached on the same machine, by changing the liners.
- The part is rotatively located from the wrist-pin hole.
- Note that the springs are out in the open, easily accessible for quick replacement when necessary. (Customer's request.)
- Section view of broach and broach body.



LAPOINTE *with more than 50 years of broaching experience, can take full responsibility for designing and building the machines, tools and fixtures to suit your requirements. For information,*

write for Bulletin DRV-3

THE LAPOINTE MACHINE TOOL COMPANY
HUDSON, MASSACHUSETTS • U. S. A.
In England: Watford, Hertfordshire

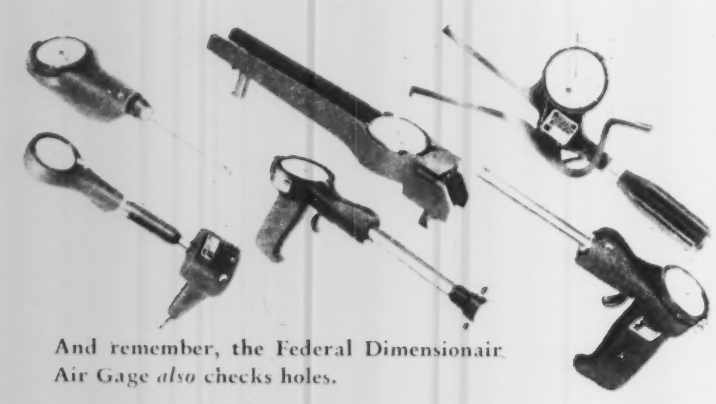
THE WORLD'S OLDEST AND LARGEST MANUFACTURERS OF BROACHING MACHINES AND BROACHES

Whatever the Hole Condition...

THERE'S A FEDERAL INDICATOR GAGE TO CHECK IT . . .

Whether a hole is deep or shallow, narrow or wide, whether it's difficult to get at, recessed or irregular, there's a Federal Indicating Gage to check it conveniently, and to precisely the dimension limits you require. With a Federal Gage you can inspect a hole as small as .122" and as large as — well, you tell us how big!

Each of the gages below is built to fit certain gaging limitations better than any other gage. You can find how useful they can be to you by sending in the coupon below.



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FEDERAL Largest manufacturer devoted exclusively to designing and manufacturing all types of DIMENSIONAL INDICATING GAGES

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FEDERAL PRODUCTS CORPORATION
2111 Eddy Street, Providence 1, Rhode Island

Please send me information on a hole gage for the following job:

☐ Sketch ☐ Blueprint is enclosed showing dimension we wish to gage.

NAME

COMPANY

STREET

CITY STATE

LETTERS

Concluded from page 10

man?" (Oct. 19, p. 45). The article was complete and your conclusions accurate.

J. E. Brown
treasurer
Cooper-Bessemer Corp.
Mt. Vernon, O.

Guide Stirs Wide Interest

Our engineers would like another copy of Part I of your article in three parts "Guide For Selection of Carbon Steel Bars" (Sept. 14, p. 104).

L. C. Strong
International Harvester Co.
Chicago

Please send me a reprint or tear sheets of the series of three articles . . .

Robert H. Frazier
Battelle Memorial Institute
Columbus, O.

I missed your middle article in the "Guide for Selection of Carbon Steel Bars" (Sept. 21, p. 131). Would you please send a tear sheet?

Donald B. Morita
engineer
WACO Mfg. Co.
Minneapolis

We wish to obtain 20 sets of reprints . . .

Oscar L. Larkin
development engineer
Lewis-Shepard Co.
Watertown, Mass.

We'd like to have three or four copies . . .

F. C. Ewert
Materials Engineering Department
Deere & Co.
Moline, Ill.

Please advise if it is possible to obtain a copy . . .

R. G. Cook, LCDR, SC, USN
supply & fiscal officer
U. S. Naval Ordnance Plant
Pocatello, Idaho

It would be greatly appreciated if you send to the attention of the writer copies of all three parts . . .

T. C. Roberts
mechanical engineer
Richmond Engineering Co., Inc.
Richmond, Va.

Please send me three copies . . . it's an excellent summary and should greatly facilitate the selection of the proper material.

B. H. Eden
Reflectone Corp.
Stamford, Conn.

• *Our supply of tear sheets on this series has been exhausted. Reprints are being made up and outstanding orders filled with these reprints shortly. A limited number of reprints will be available through* STEEL*'s Reader Service Department after existing orders are filled.—ED.*

Source of Fruehauf Photo

The Oct. 5 issue of your good magazine has a very attractive illustration on the front cover. It has aroused considerable comment among folks at the Fruehauf Trailer Co. Will you please let us know the origin of this photograph and if it is from Fruehauf?

William G. Anderson
Allman Co., Inc.
Detroit

○ *Photo was taken in Fruehauf Trailer Co.'s Avon Lake, O., plant.—ED.*

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Cincinnati sheared blanks are accurate. Only accurate blanks insure accurate economical forming and low cost assembly.

Write for Cincinnati Shear Catalog S-6.

THE CINCINNATI SHAPER CO.

CINCINNATI 25, OHIO, U.S.A.

SHAPERS • SHEARS • BRAKES

From 6-ton ingot... to fine and true gage strip, in a straight line from one original heat!

BLISS-BUILT hot mill for Empire Steel combines new and rebuilt equipment to save time and investment

Engineering a complete hot strip mill is no minor assignment at best. But when higher production goals must be reached, partially with existing machinery, the assignment becomes a real challenge.

In all, 30 complex units (mills and auxiliary equipment) were involved. Empire established the requirements, budget and time table. Existing machinery would be used as much as possible, but *rebuilt, repowered* and *modernized*. Completely new mills and accessories were to be added for certain vital operations. These were the requirements presented to Bliss—*who engineered the entire project.*

This highlight picture sequence gives some idea of the project's scope. The new objective called for transforming 6-ton ingots into hot rolled strip of fine tolerance... in a straight line and from the original heat! And the strip production had to yield sheet stock which, through subsequent finishing operations, would meet the trade's exacting specifications. This demanded Empire-Bliss teamwork, comprehensive field research, creative engineering at the site and at home, and unusual resourcefulness on the part of Bliss engineers.

In production now, Empire's new hot strip mill has met every test successfully. Quality and output have reached anticipated goals. But this is just one example of Bliss' ability to supply the special skills, knowledge and service to meet specific requirements. Next time you have a rolling mill problem, talk it over with a Bliss engineer. The chances are good that Bliss will supply the best practical solution.

E. W. Bliss Company • General Office: Canton, Ohio

ROLLING MILL DIVISION: SALEM, OHIO

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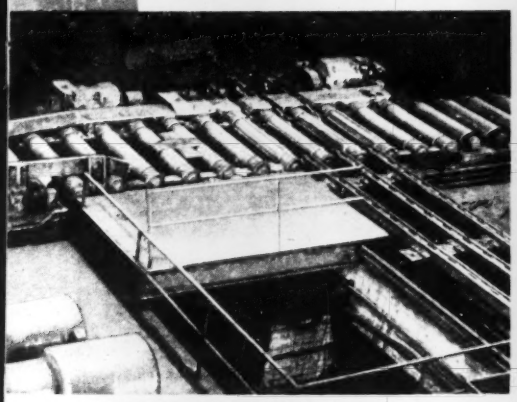
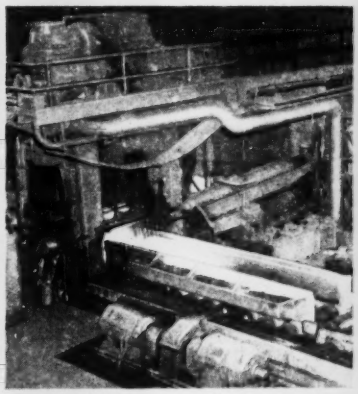
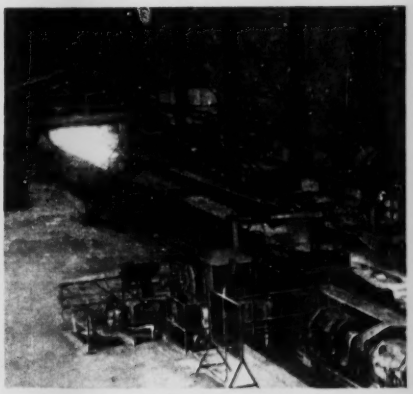


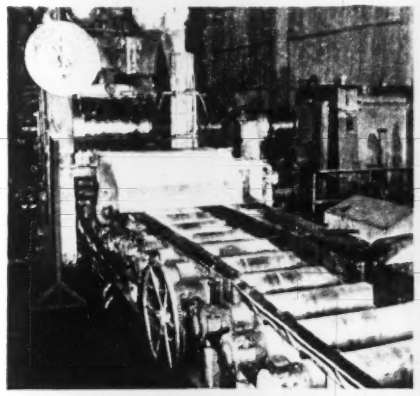
2. INGOT CROSS TRANSFER AND APPROACH TABLE



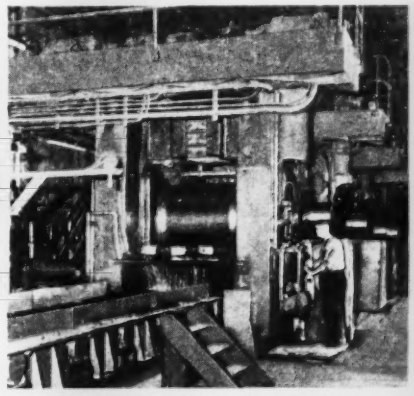
3. BLOOMING MILL—Revamped; supplemented with heavy mill tables



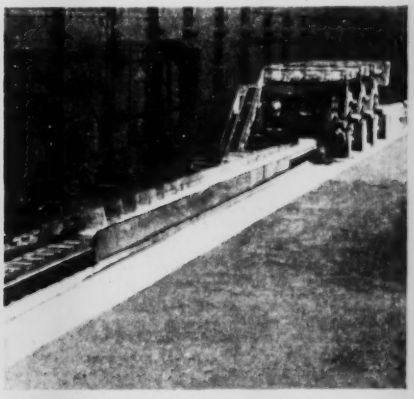
4. EDGING STAND of 1500 HP—designed new and to complement existing bloomer



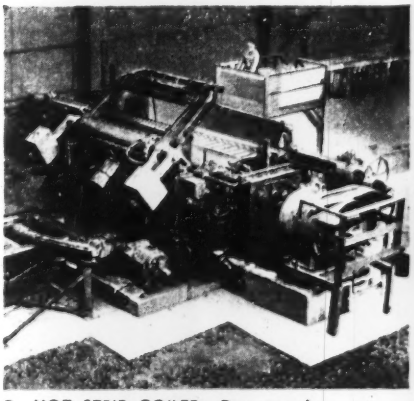
5. INTERMEDIATE ROUGHER—Modernized



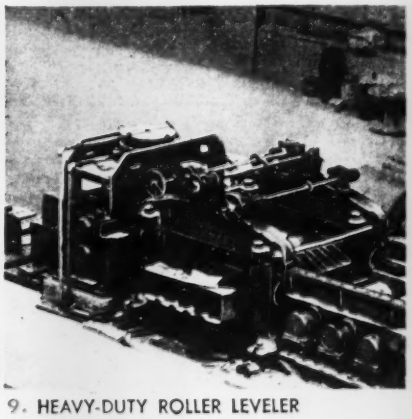
6. FOUR-STAND FINISHING TRAIN—Delivery end



7. RUNOUT TABLE to upcoiler and shear line



8. HOT STRIP COILER—Revamped



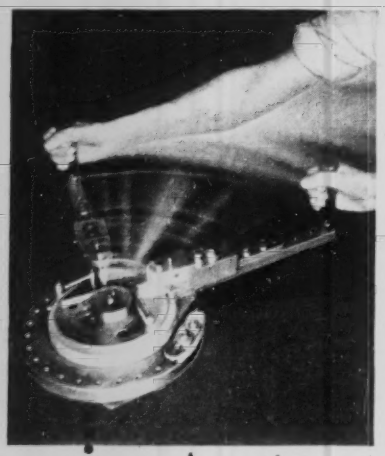
9. HEAVY-DUTY ROLLER LEVELER AND SHEAR

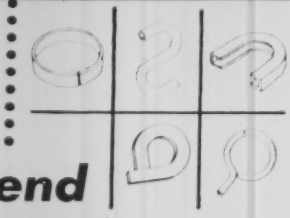
10. TERMINAL POINT OF LINE—Finish leveler and plate piler

Want a practical solution to your rolling mill problems? Do as Empire Steel Corporation did. Ask Bliss to show you how you can combine your available resources with new machinery to realize new production objectives. It can save you time and money, too.

Write today for your copy of Bliss' revised Rolling Mill Brochure. Ask for Bulletin 40-A.

Remember: BLISS for Presses, ROLLING MILLS and Special Machinery





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Accurately, Easily, Quickly with a DI-ACRO* BENDER

Simple and complex bends can be formed and duplicated in many ductile materials with a versatile Di-Acro Bender. Bending capacity of the five hand operated models ranges from 1/16" wire to 1" round mild steel bar. Many accessories are available for bending various materials and shapes. The Di-Acro Bender can be delivered completely tooled for most forming requirements in solid materials and tubing.

*Pronounced Die ack ro

DI-ACRO HYDRA-POWER BENDER

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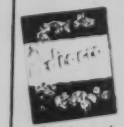

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304 8th Avenue
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STEEL

The Weekly Magazine of Metalworking

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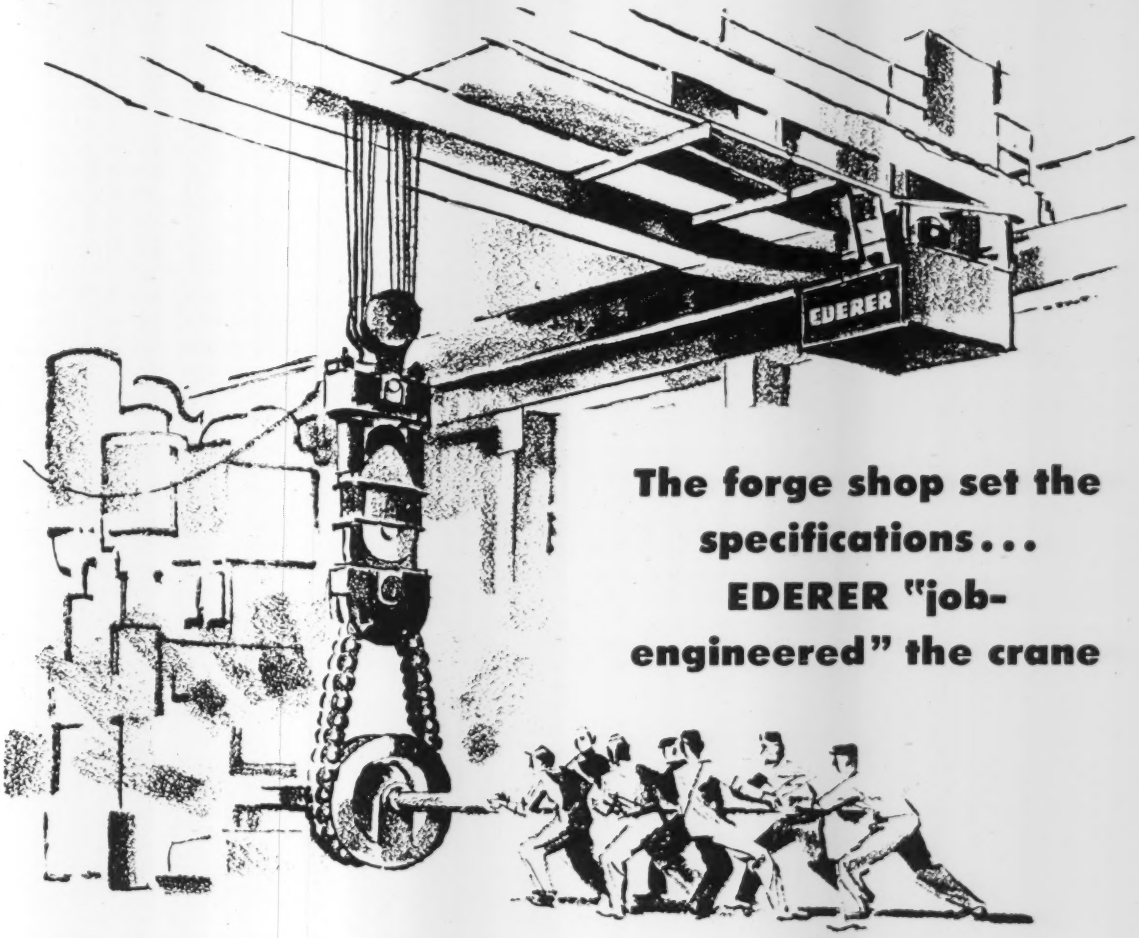

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Requirements for a crane to serve a 1500-ton steam press are exacting. EDERER "job-engineered" this 50-ton crane to those requirements for a large fabricator of heavy steel equipment and forgings. It has been in continuous service for the past nine years—handling some of the heaviest forgings made in the West.

Whatever your industry, you have *your* particular materials handling requirements. EDERER—one of the largest crane manufacturers in the West—can "job-engineer" a crane to meet them—whether for plant expansion or new construction.

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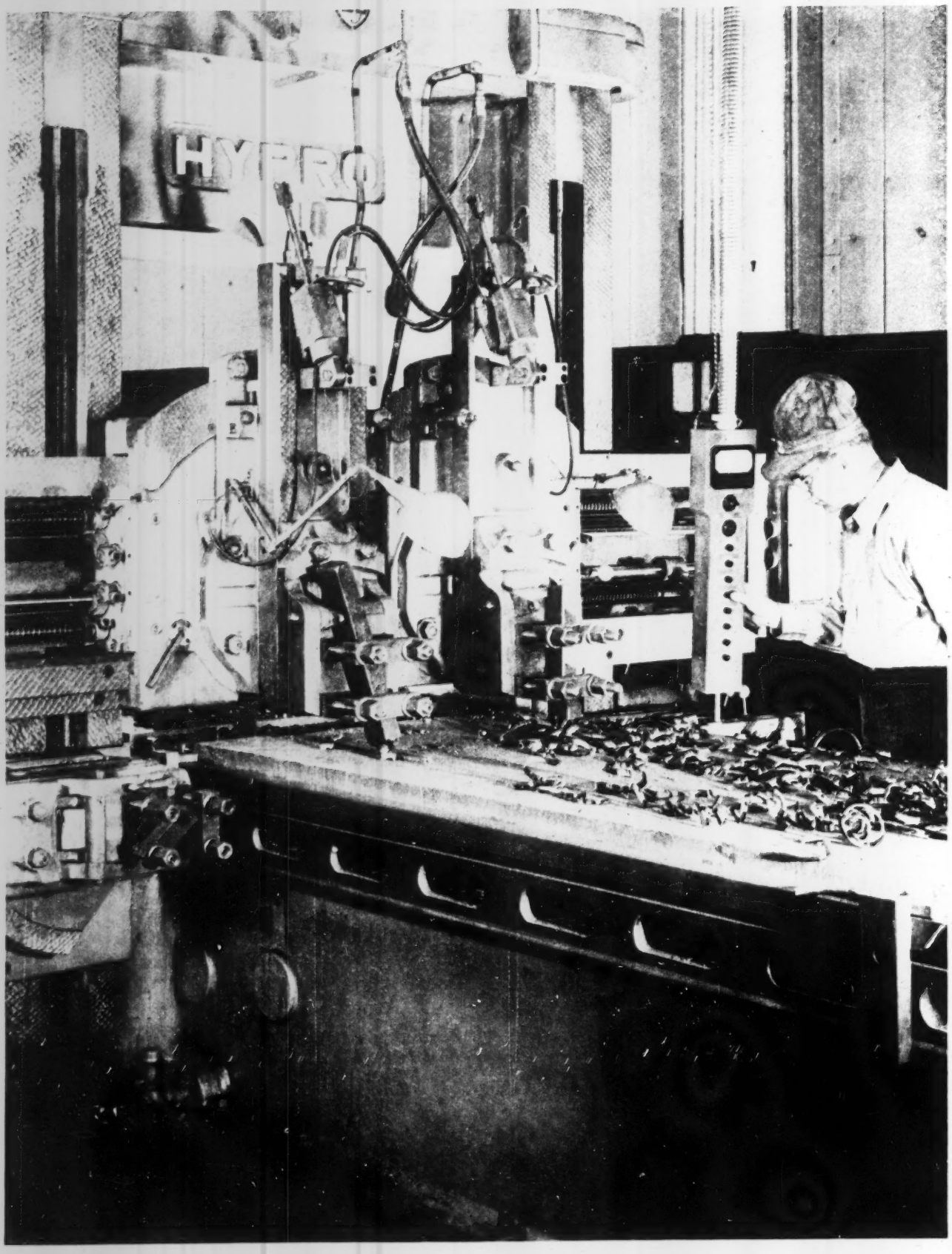
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Carbide finger... with the Midas touch!

This G & L Double Housing Planer will help you make a handsome profit on every job, big or small. It has the proper power application and extra rigidity necessary to perform carbide planing operations at 300 ft. per minute

If you're searching for a heavy planer that allows you to get the fastest most economical use of carbide cutting tools, investigate the G&L line of Double Housing and Openside Planers.

These massive machines offer you many important advantages. In addition to the inherent rigidity of the rail, heads, housings, table and bed — a twin helical gear train table drive provides straight power flow to eliminate side thrust.

G&L HYPRO Double Housing Planers and Openside Planers are available with working widths up to 144 inches . . . variable voltage drives up to 100 hp . . . bed lengths to suit the particular model. For complete details, see your G&L representative, or write —

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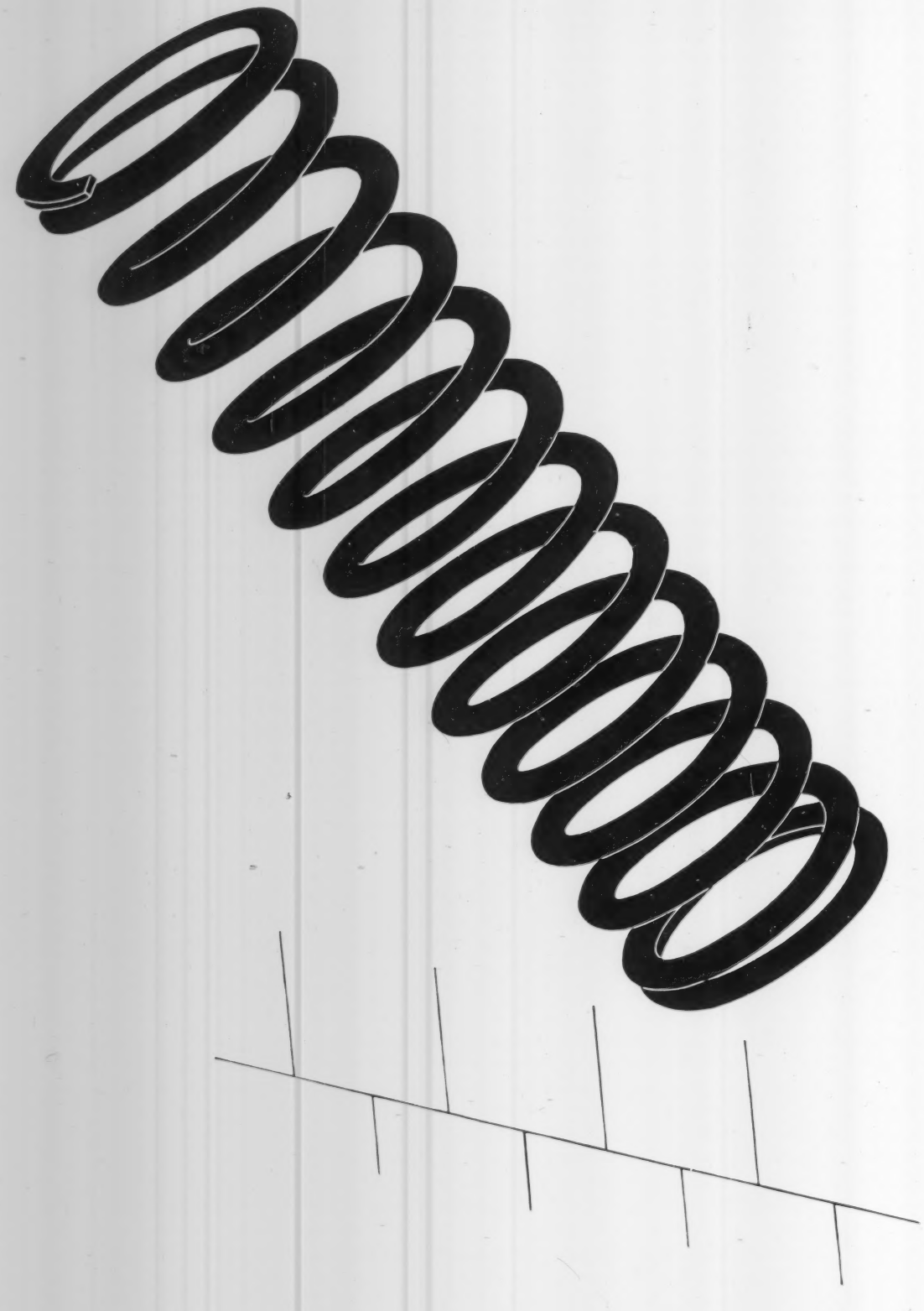
Builders of the world's finest heavy duty machine tools — Horizontal Boring, Drilling and Milling Machines — table, floor and planer types; Hypro Double Housing and Openside Planers; Planer Type Milling Machines and Vertical Turning Mills — and Davis Cutting Tools.



PRESENTING THE NEW DRAVO *Paraflo* SPACE HEATER

Now available in units of 200,000 or 250,000 Btu/hr output

The new Dravo *Paraflo* Space Heater is designed for heating open areas in small commercial and industrial buildings. Typical installations include service stations and garages, construction offices, warehouses, recreation centers, agricultural buildings, stores, offices and showrooms.

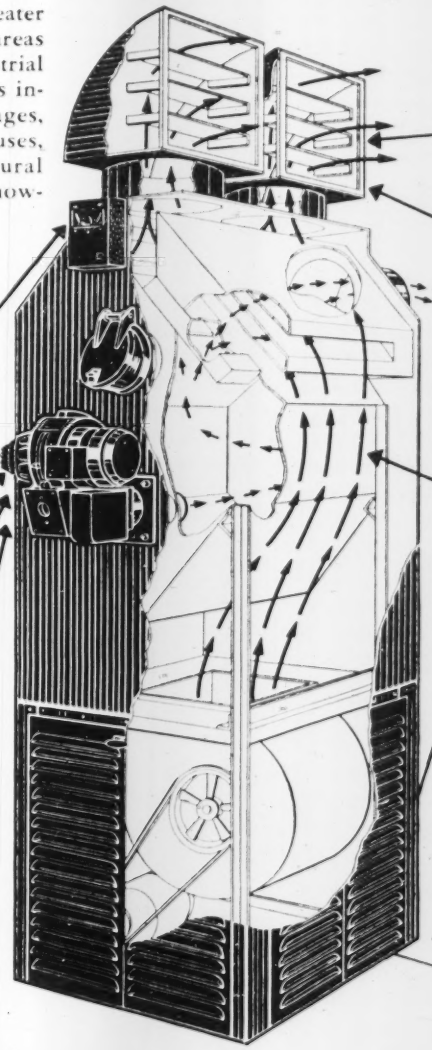
Look at these features

COMPLETELY AUTOMATICALLY AND THERMOSTATICALLY CONTROLLED— NO ATTENDANT REQUIRED

AUTOMATIC CONTROLS COMPLETELY WIRED AND FLAME-TESTED

GUN-TYPE OIL BURNER APPROVED BY UNDERWRITERS' LABORATORIES

BURNS UP TO AND INCLUDING NUMBER 2 OIL



MAXIMUM AIR THROW 90-FOOT. WITH OR WITHOUT DUCTWORK

DISCHARGE NOZZLES CAN ROTATE 360°

FLOATING STAINLESS-STEEL COMBUSTION CHAMBER ELIMINATES REFRACTORY LINING; GIVES LONGER SERVICE

The new Dravo *Paraflo* Heater makes available to you a complete line of oil-burning Dravo Space Heaters ranging from 200,000 to 2,000,000 Btu/hr output in the *Paraflo* or *Counterflo* series. Dravo also produces gas-fired space heaters in a range of 68,000 to 2,000,000 Btu hr output in the Unit Heater and *Counterflo* models.

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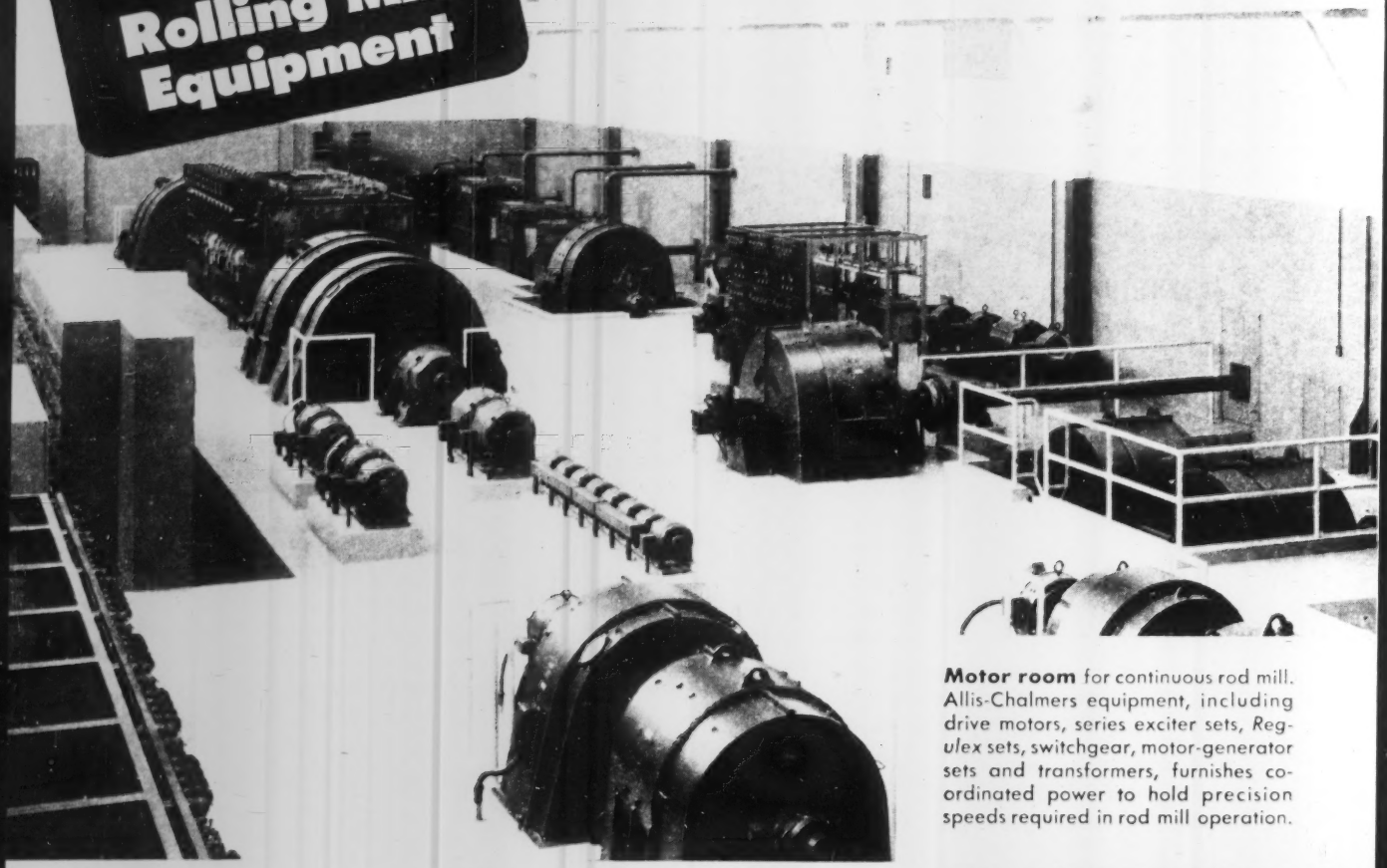
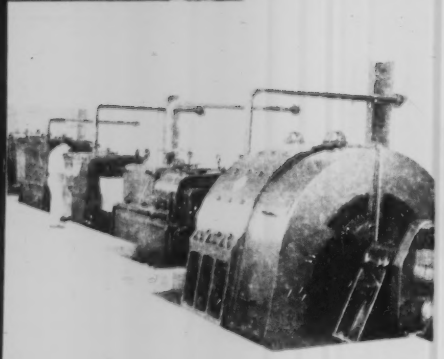
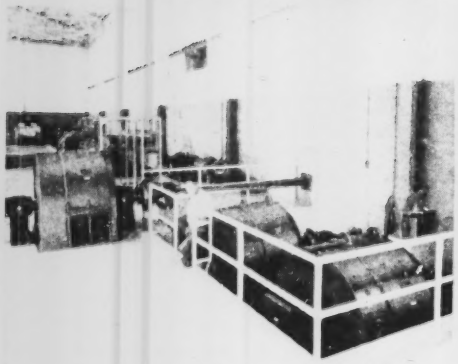
Rolling Mill Equipment



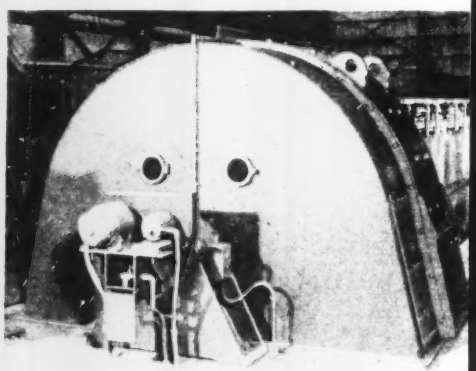
Motor room for continuous rod mill. Allis-Chalmers equipment, including drive motors, series exciter sets, *Regulex* sets, switchgear, motor-generator sets and transformers, furnishes coordinated power to hold precision speeds required in rod mill operation.



Roughing stand drives in the motor room. The 400-hp, 300/900-rpm dc motor in the background drives stands 1 and 2, and the 1500-hp, 300/750-rpm dc motor in the foreground drives roughing stands 3 through 8.



Intermediate stand drives in motor room. Three of the four 800-hp, 300/900-rpm dc motors driving stands 9 through 16. Larger rods are taken directly from these stands without passing through the finishing stands.



Finishing stand drive in the mill proper. This Allis-Chalmers 2000-hp, 300/600-rpm dc motor drives stands 17 through 22. Any number of these six stands may be used to run a variety of small rod sizes.

NEW ROD MILL
at Kokomo, Indiana

AN IMPORTANT PART of Continental Steel Corporation's expansion program to satisfy growing demands for their wire products is the specially designed Allis-Chalmers equipment controlling and driving the 22 stands in this all-new continuous rod mill.

Allis-Chalmers motors and controls are responsible for furnishing the precision speeds required in processing rod from billet to finished product. Each stand must be perfectly coordinated with the others to receive and pass rod from a starting speed equal to a walk and progressing to a finishing speed approximating 60 miles per hour.

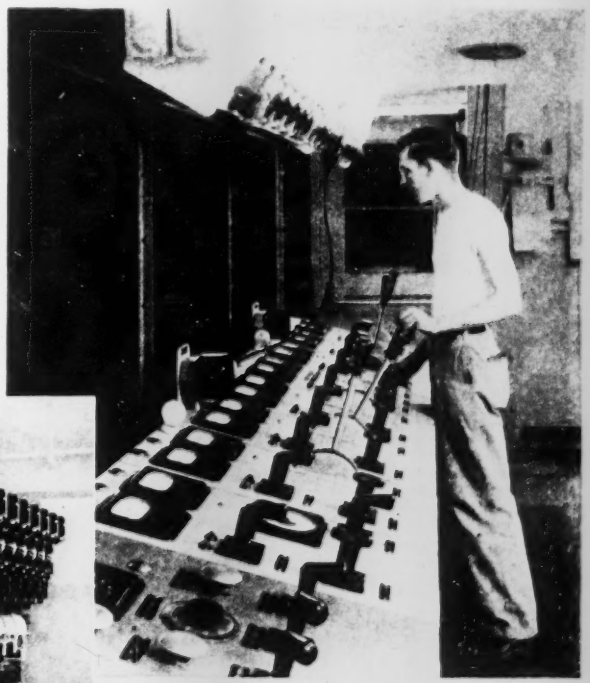
Simplified Control

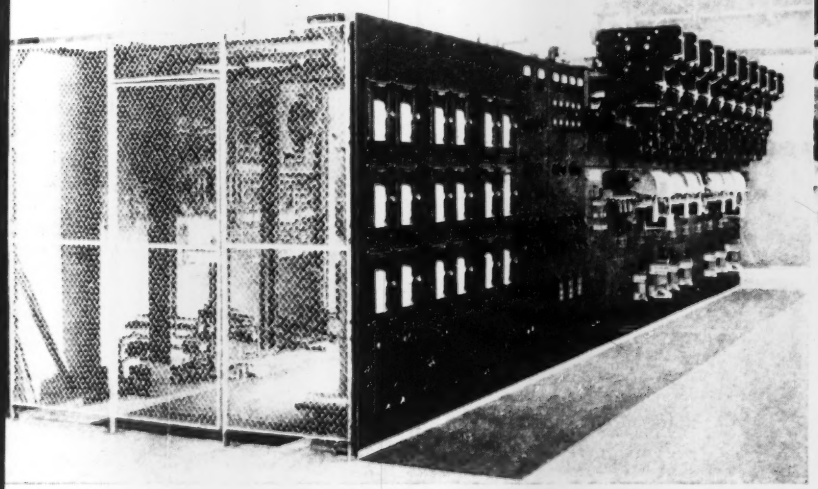
The seven drive motors are standard rolling mill types, engineered to meet the mill requirements and to operate through a simplified speed control system regulating motor field circuits with individual series exciters. Satisfactory mill operation, running three rods simultaneously, has produced 24 coarse and fine rod sizes from 0.218 to 0.681 inch, with projected use up to 1.125 inches.

This mill system gives Continental the benefits of flexibility and adaptability, with quality control not limited to a particular product size. Simplified control and durability are features Allis-Chalmers engineers have used to assure low maintenance costs.

For specific information on control, drives, and other electrical equipment to meet the needs of your expansion or conversion program, contact A-C office nearest you or write to Allis-Chalmers, Milwaukee 1, Wisconsin. A 4151

Register is an Allis-Chalmers trademark





Pulpit control for rod processing. From this vantage point the operator controls stand speeds varying from 38 to 114 feet per minute at the start of roughing, to finishing speeds of 5000 feet per minute.

Variable voltage control panel (left) in the motor room for the main drive motors.

ALLIS-CHALMERS

Power, Electrical, Processing Equipment for Iron and Steel

Quantity PRODUCTION of GREY IRON CASTINGS

ONE OF THE NATION'S LARGEST AND MOST MODERN PRODUCTION FOUNDRIES

ESTABLISHED 1899

THE WHELAND COMPANY

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Curtis AIR COMPRESSORS AIR HOISTS AIR CYLINDERS

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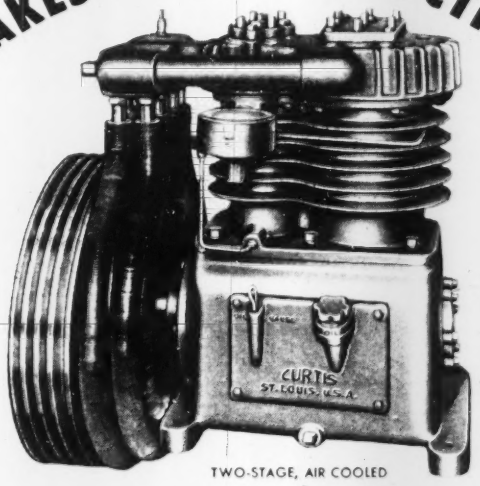

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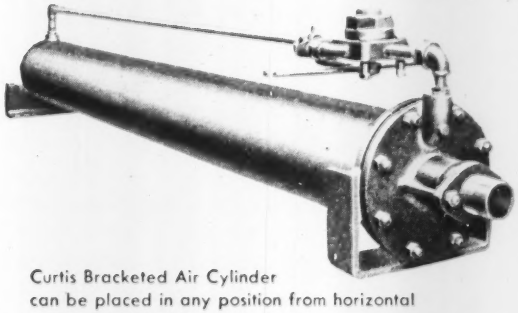
PRECISION BUILT COMPRESSORS UP TO 50 H.P.

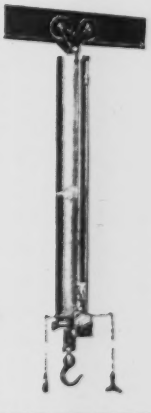
- Advanced two-stage design saves electric current.
- Delivers more air per horsepower.
- Timken tapered main bearings.
- Pressure lubricated rod and piston bearings.
- Assures long trouble-free performance.

TIME-SAVING Curtis Air Cylinders and Air Hoists



Curtis Bracketed Air Cylinder can be placed in any position from horizontal to vertical. Will lift, lower, push or pull.

- Low-Cost lifting, lowering, pushing, or pulling
- Accurately controlled operating speed
- Cylinders are ground and polished
- Valve is of disc type lapped to its seat.



Curtis Pendant Air Hoist for any lifting or lowering job where headroom is not limited.

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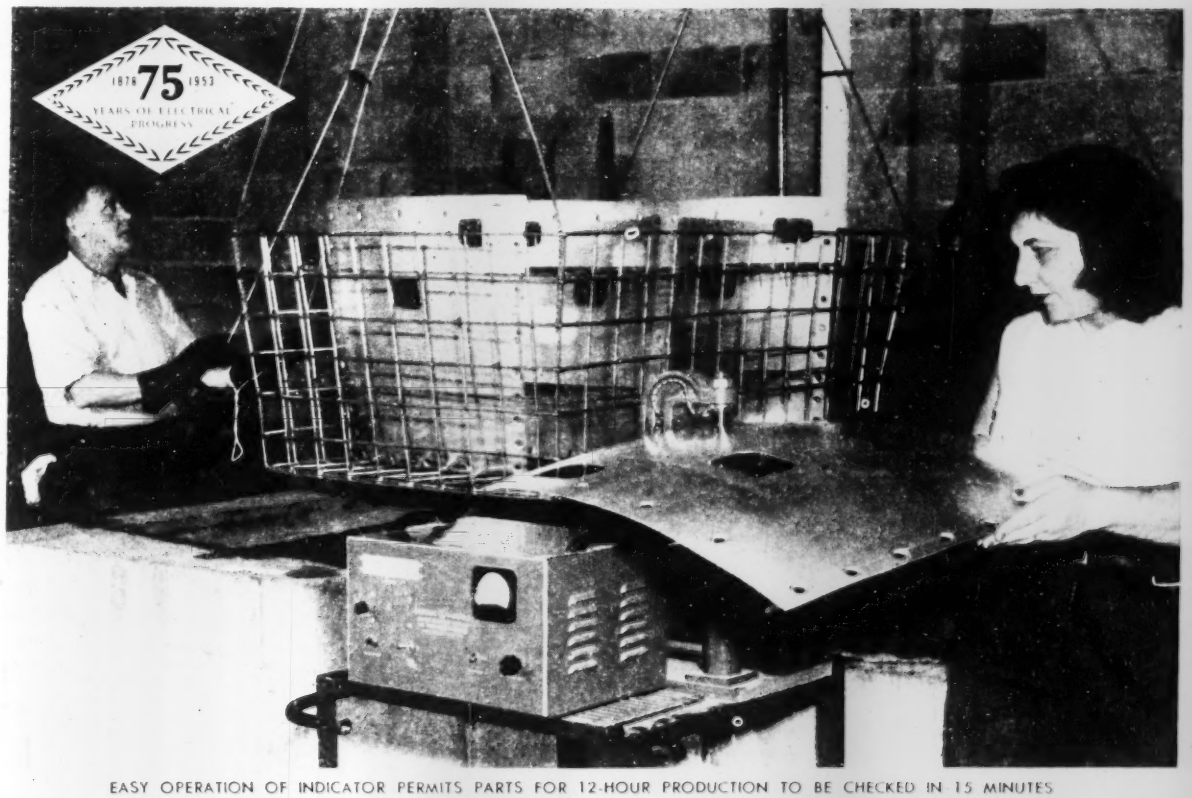
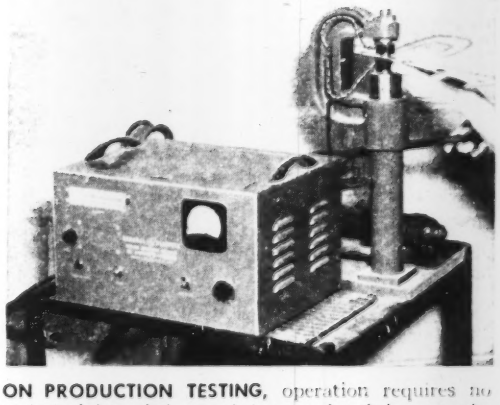


EASY OPERATION OF INDICATOR PERMITS PARTS FOR 12-HOUR PRODUCTION TO BE CHECKED IN 15 MINUTES

Fast testing for better aluminum welds

Guesswork taken out of welding preparation by G-E Surface Resistance Indicator



ON PRODUCTION TESTING, operation requires no technical knowledge and is completed in seconds.

Spotweld Co., of Cleveland, Ohio uses a General Electric Surface Resistance Indicator in the preparation of aluminum parts for welding. Fabricating parts for aircraft, refrigerator units, tie rails, and vending machines, the company carefully checks surfaces to be welded after degreasing and deoxidization.

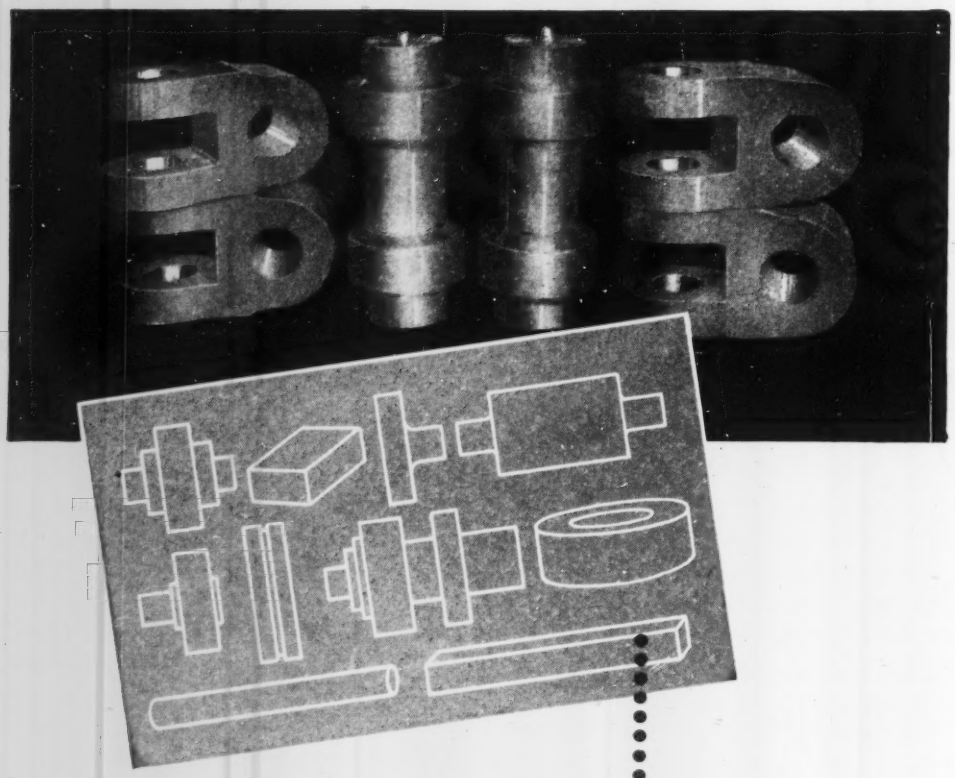
"Our G E indicator has taken the guesswork out of preparation of aluminum for good welding," the company reports. In addition, all parts to be welded can be checked in fifteen minutes for a twelve-hour production period.

Surface resistance of aluminum is important in condition of the weld nugget. If cleaning and deoxidizing solutions become contaminated, metal is not thoroughly prepared and good welds cannot be obtained. Large changes in resistance will result from relatively small changes in concentration or contamination of solutions.

Electrode pickup, inconsistency of welds and metal expulsion can be greatly reduced by use of the indicator. Further information can be obtained from your nearest G E Apparatus Sales Office, or write for Bulletin GEA-5823 to General Electric Co., Section 687-121, Schenectady 5, N. Y.

You can put your confidence in—

GENERAL ELECTRIC



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Desired forgings in the available types of stainless and heat-resisting steels are produced in a wide range of shapes and sizes by our Forging and Casting Plant, noted for uniformly consistent properties and finish.

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We can supply clean, top-quality stainless forgings either "as is," or rough machined, heat treated, etc.

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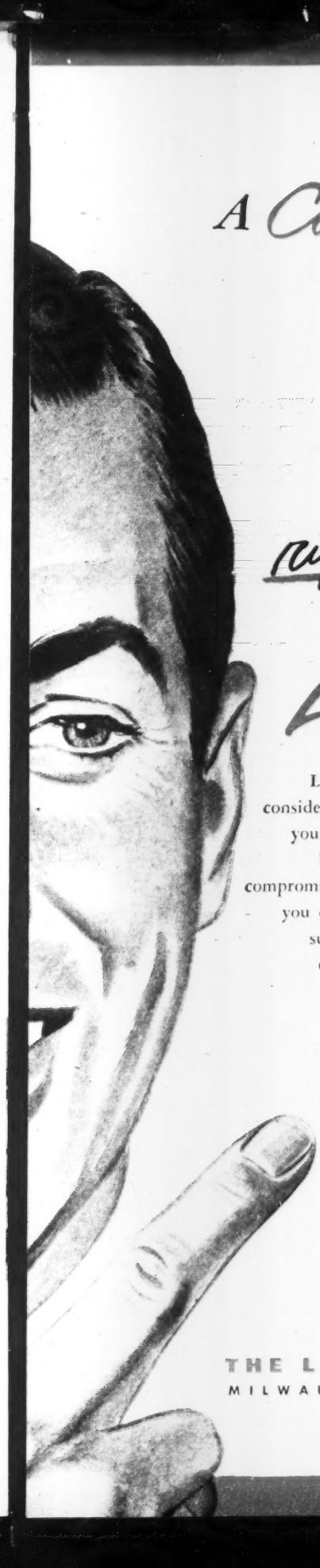
TIME-TESTED STAINLESS STEEL



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It pays to think first of the Louis Allis Co. whenever you're considering adjustable speed drives for your product or plant. Louis Allis builds all basic types. There's no compromising — from this complete line you can select the unit that's exactly suited to your job conditions and engineered for your application.

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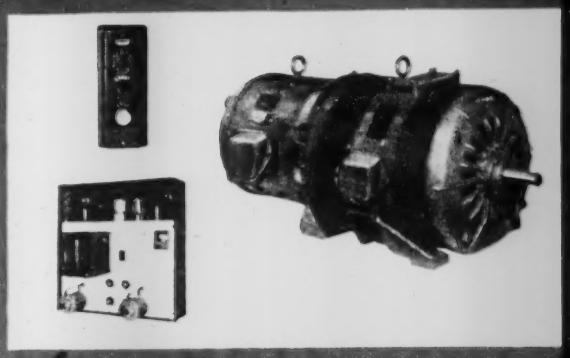
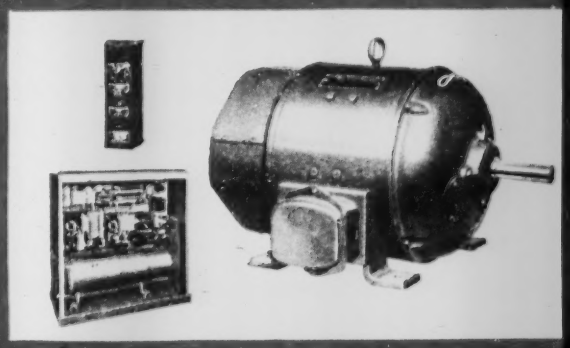
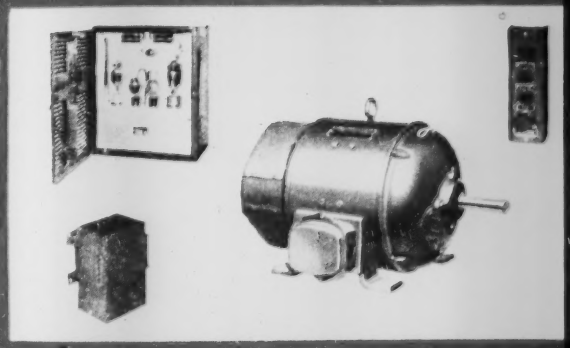


AJUSTO-SPEED. ½ to 75 horsepower. A versatile eddy current clutch combined with a constant speed AC squirrel cage motor provides wide, continuous duty speed ranges. Tachometer feedback circuit offers precise speed regulation in an unusually compact drive. Many optional features available — dynamic braking, torque control, threading speeds, inching, jogging, multi-motor operation and range drives.



SELECT-A-SPEED. 3 to 200 horsepower. Rotary magnetic amplifier and adjustable voltage control provide superior speed regulation — better than required on most machines — from ½ base speed or less to full base speed. All-electric circuits — easily serviced. A.C. source, converted to D.C. by motor-generator set, drives adjustable speed D.C. motor. Many special control features available — reversing, dynamic braking, jogging, special programming or sequencing control, extra wide speed range. All drive motor enclosure available.

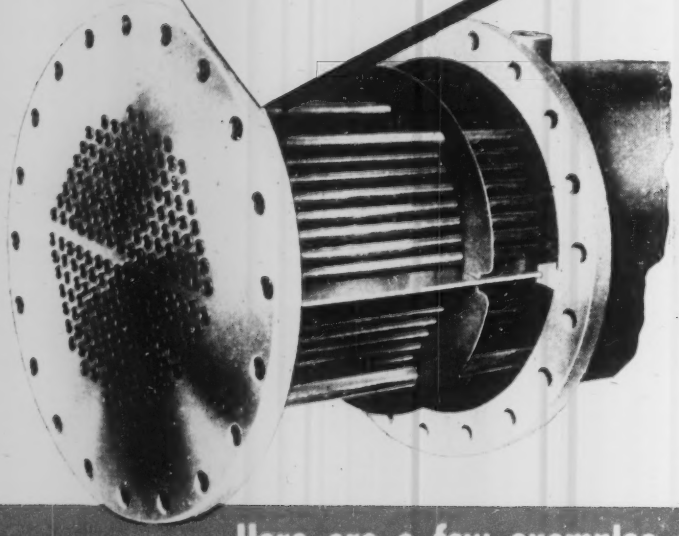


NEW! ELECTRONIC SELECT-A-SPEED. ½ to 15 horsepower. D.C. adjustable speed drive motor operates from A.C. electronic power unit. Infinitely adjustable speed ranges 5:1, 20:1, 50:1, 100:1 available. Unusually close speed regulation to ½% with optional tachometer feedback circuit. Included as standard are: dynamic braking, torque limit, line voltage compensation. A few available modifications include: reversing, jogging, threading, and quick slow-down. All motor enclosures and control stations — from open to explosion-proof.

U·S·S National

"the Best Answer"

TO CONDENSER AND HEAT EXCHANGER PROBLEMS . . .



THE ideal heat transfer apparatus calls for high-strength, thin-walled tubes that offer the least resistance to the flow of heat, the maximum resistance to pressure—with smooth surfaces that can be readily cleaned. Such tubes must have dependable, uniform physical and chemical properties suitable for application in connection with steam power generation, petroleum refining, refrigeration, and chemical processing. And here, in short, we have the best description of U·S·S NATIONAL Seamless Steel Tubes.

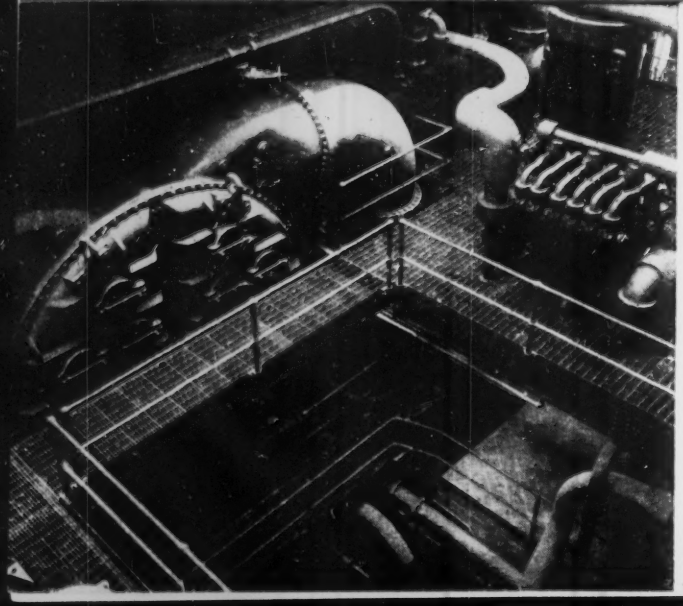
Of the various commerical materials that may be fabricated into tubing for condenser and heat exchanger service, none possesses the combination of properties that will meet these requirements as well as steel either in plain form or alloyed with such elements as chrome, molybdenum, nickel, or silicon. Seamless Steel Tubes, then, are the answer. Beyond all question, they meet these rigid requirements of industry.

May we suggest that you bring your condenser and heat exchanger problems to our engineers before you select new tubing. This is their special field, built upon years and years of experience, hundreds upon hundreds of case histories. They are anxious to help you find the best solution possible to your problem. For additional information, write to National Tube Division, 525 William Penn Place, Pittsburgh 30, Pa.

NATIONAL TUBE DIVISION,
UNITED STATES STEEL CORPORATION, PITTSBURGH, PA.
(Tubing Specialties)

COLUMBIA GENEVA STEEL DIVISION, SAN FRANCISCO, PACIFIC COAST DISTRIBUTORS
UNITED STATES STEEL EXPORT COMPANY, NEW YORK

Here are a few examples of the many alloy steels developed to



LOW NICKEL ALLOYS (3½% and 5% nickel). These alloy steels are widely used where high impact resistance at sub-zero temperatures is desired. Additionally, they are used to combat general corrosion by neutral salt solutions such as sodium and potassium nitrate or sulphate. They are also advantageous in minimizing caustic embrittlement—a special type of corrosion occurring when stressed carbon steel is in contact with hot alkaline solutions. Soda and Kraft paper mills find these nickel steels give increased performance over plain carbon steel in black liquor evaporators.

MEDIUM CHROMIUM ALLOYS (5% chromium ½% molybdenum to 9% chromium 1% molybdenum—some with high silicon content). These alloys have oxidation resistance and strength characteristics at high temperatures similar to the low chromium alloys. Corrosion resistance, particularly to sulphur compounds such as SO_2 and H_2S, is generally appreciably better than that of the lower chromium alloys, hence they find application where the latter group does not afford sufficient increase in service life.

Seamless Alloy Steel Tubes

combat specific corrosion problems:

LOW CHROMIUM ALLOYS (1¼% chromium ½% molybdenum to 3% chromium 1% molybdenum—some with high silicon content). Principal applications are for service conditions requiring oxidation and corrosion resistance, as well as reasonable strength, at elevated temperatures. These alloys are used to resist rapid deterioration in service involving hot corrosive gases in many industrial applications.

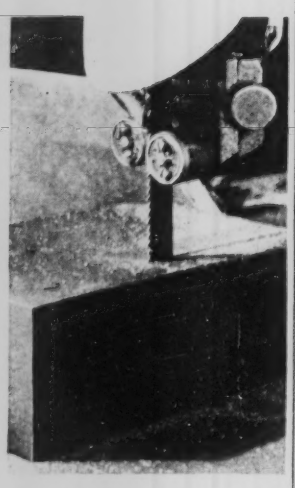
U·S·S STAINLESS STEELS (18-8 and modifications with titanium, columbium or molybdenum). These alloys resist oxidation at temperatures up to 1500 F; they also exhibit excellent strength combined with high ductility and impact resistance, together with maximum corrosion resistance, at all temperatures from the lowest obtainable up to above 1500 F. They find wide application under the most severe service conditions in the heavy chemical industries, including the related fields of petroleum refining and paper making. They are extensively used in food processing, dairy and beverage industries, and drug preparation to avoid taste and color contamination. Their general corrosion resistance makes them useful in the field of plastics preparation, fabric dyeing, and numerous others.

U·S·S National Seamless Alloy Steel Tubes

USS

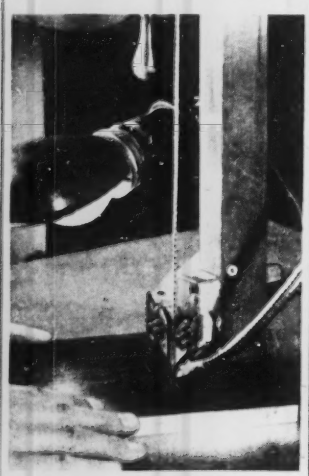
UNITED STATES STEEL

Pick the Top "NAME BAND" for all these Metal-Sawing Jobs



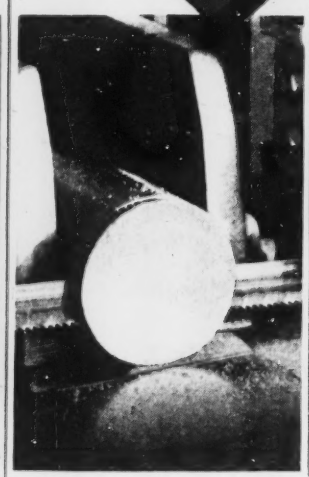
For Heavy Production Cutting

You'll like this rugged, break-resistant standard tooth blade for trimming gates and risers off castings, cutting metal bars and other tough production work. Hardened along the tooth edge only, it cuts fast, stays sharp, gives a longer run for your money! All standard widths and tooth spacings. Furnished in 100' and 300' coils or welded to length for specific machines.



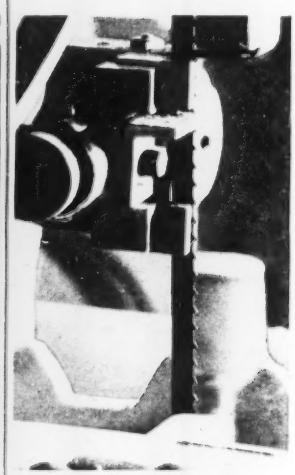
For Contour Cutting and Die Making

In the narrower widths, this edge-holding, smooth cutting blade is an outstanding favorite for contour work. Because the teeth are set with absolute evenness on both sides of the blade, you can depend on straight, on-the-line cuts with no "leading." All standard widths and tooth spacings furnished in 100' and 300' coils or welded to specified length.



For Horizontal Cut-Off Work

Furnished either Regular or Wavy Set in the wider widths, this Simonds-made standard tooth blade easily handles the wide variety of cutting required in general shop and steel warehouse operation. All sizes come in 100' and 300' coils or welded to length.



For Cutting Soft Materials

This Skip-Tooth Hard Edge Blade has extra gullet capacity with maximum blade strength . . . gives fast, trouble-free service in cutting aluminum, magnesium, plastics, plywood and hardwood. All standard sizes available in 100' and 300' coils or welded to length for specific machines.

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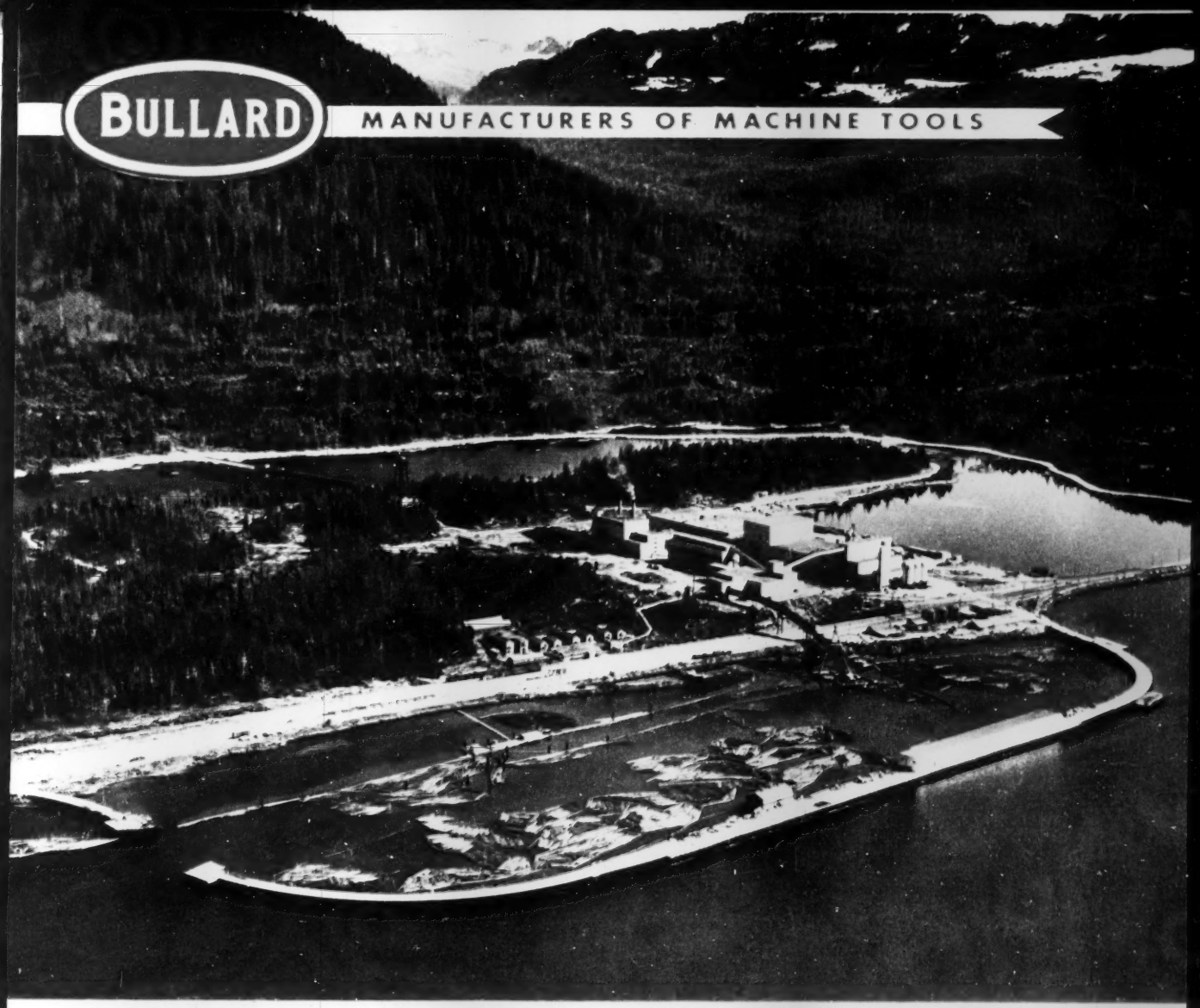

A Large Operation in the Logging Industry — Celanese Corp. of America Photo

The Invisible Background of Industrial Progress

No doubt the general conception as to the importance of the logging industry is in its direct contribution to the building of homes, furniture and other wood products and structural forms.

It is our purpose here to point out that this industry enters into the making of paper, plastics, material for wearing apparel, upholstery of all kinds, innumerable gadgets and toys — all part of the American home. These things all emanate from "The Invisible Background of Industrial Progress."

• In this "Invisible Background" are *Modern Machine Tools* — the manufacturing equipment which enables producers to make and distribute their products at a cost equitable with the economic structure of free enterprise.

Bullard Machine Tools have in the past and will continue to play an important role in economic manufacturing progress.

• *For greater manufacturing economy REFER to next page.*

THE BULLARD COMPANY

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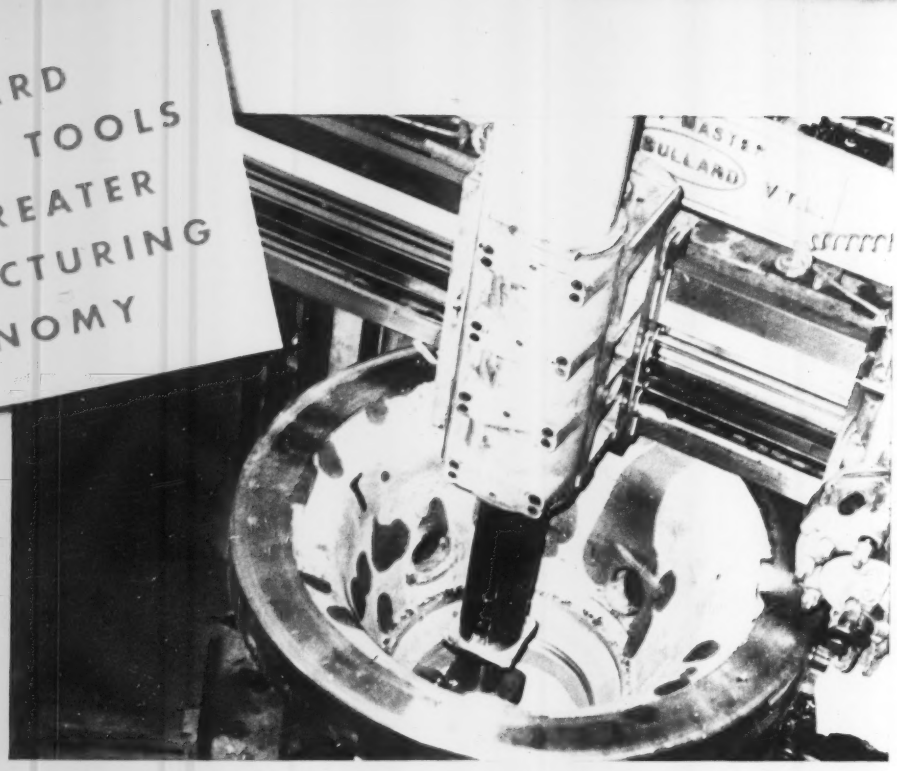
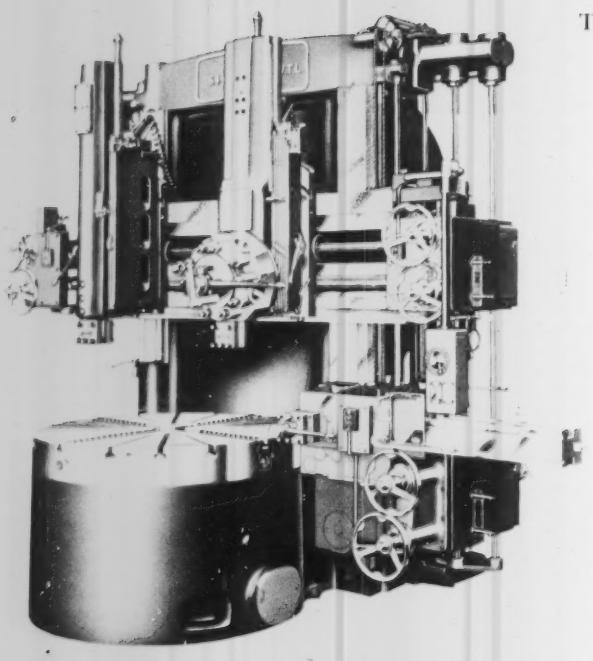
BULLARD MACHINE TOOLS FOR GREATER MANUFACTURING ECONOMY



Whether the work be large or small, single piece jobs or longer production runs, The Bullard Cut Master Vertical Turret Lathe is a machine designed to meet your requirements.



Rigidly constructed with "built in" accuracy, the Bullard Cut Master Vertical Turret Lathe, available in six sizes, is everything its name implies — and more.

Versatility, accuracy and efficiency mean greater manufacturing economy, and in today's competitive market these factors cannot be overlooked.

Let Bullard show you how the Cut Master Vertical Turret Lathe can increase your manufacturing economy by cutting time on cuts and cutting time between cuts.

BULLARD

Time saved is money earned. Write now for complete information.

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You can thoroughly descale most metals

in 20 minutes or less!

RETREATMENTS ARE RARELY NEEDED WITH THE

DU PONT SODIUM HYDRIDE DESCALING PROCESS

In 10 to 20 minutes fabricated articles, sheets, wire, rods, bars and forgings are completely descaled with the Du Pont Sodium Hydride Descaling Process. Even heavily scaled forgings (1/2" scale thickness) take less than an hour. And *in only 15 seconds* you can get cold reduced-annealed strip clean and bright!

Fast as it is, sodium hydride descaling is amazingly thorough—retreatments *are rarely needed* to clean a wide range of metals completely. All metals not affected by fused caustic at 700°F. can be treated, either separately or in combination. There's never any danger of etching or pitting . . . never a costly reject due to loss of gauge. Base metal is always protected, since *bath action stops the moment scale has been reduced.*

Get all the facts from Du Pont—the pioneer of Sodium Hydride Descaling. You'll find the Process remarkably economical to install and operate. Just get in touch with our nearest district office or send in the coupon below.

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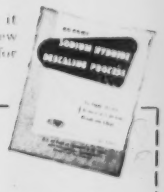
*Barada & Page, Inc.

More detailed information about the process—how it works, what it can do for you—can be found in our new book. Call our nearest office or use the coupon below for your copy.



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Electrochemicals Department S-119
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Please send me your booklet on Sodium Hydride Descaling.

Please have one of your technical men call. I am interested in descaling _____

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Sodium hydride process for positive descaling

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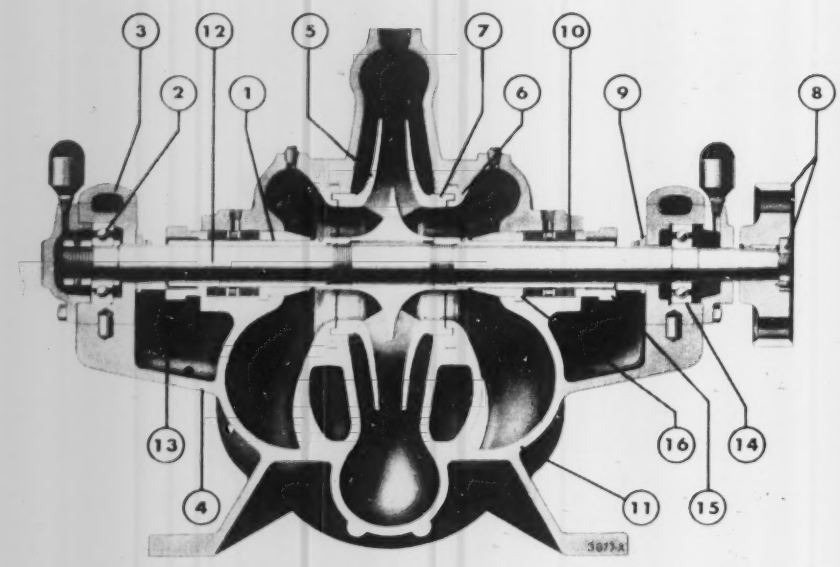
BETTER THINGS FOR BETTER LIVING . . . THROUGH CHEMISTRY

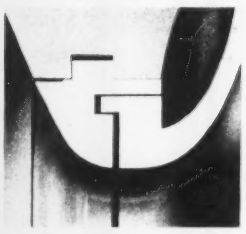
DE LAVAL

SINGLE STAGE CENTRIFUGAL PUMPS

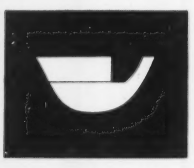
for dependable industrial service



Labyrinth wearing rings minimize leakage...maintain high efficiencies



Labyrinth rings used in these De Laval pumps retard flow of water through labyrinth passage.



Flat rings showing relatively unimpeded flow of water.

(1) **Shaft Sleeves** are screwed on, to abut the impeller and make a water-tight joint. Sleeve expands freely and independently of shaft when temperatures change. There is no tendency to buckle.

(2) **Thrust Bearing** locates rotor axially.

(3) **Bearing Caps** easily removable for maintenance.

(4) **Bearing Brackets** scraped to lining bars for perfect alignment.

(5) **Impeller** hydraulically balanced, finished on all surfaces.

(6) **Labyrinth Wearing Rings** held accurately in machined grooves in both case and cover.

(7) **Impeller Wearing Rings** threaded on impeller, opposite to rotation.

(8) **Flexible Coupling** ground on all exposed surfaces and statically balanced, complete coupling supplied, pump half mounted on taper so that it can be easily removed. Check nut locks coupling on taper.

(9) **Deflector** keeps water out of bearing.

(10) **Stuffing Boxes** extra deep; lantern rings for water sealing.

(11) **Pump Case** horizontally split; machined to limit gages.

(12) **Steel Shaft** ground to limit gages.

(13) **Drip Boxes** large; provided with drain openings.

(14) **Radial Bearing** free to move axially, thus avoiding temperature strains.

(15) **Glands** split horizontally.

(16) **Protecting Bushings** renewable.

You can count on the performance of the De Laval Single Stage Centrifugal Pumps because they are precision-made to high manufacturing standards and incorporate the many quality design features shown in the cross-section.

They operate at high or low speeds, at high or low heads...with maximum efficiency.

For example, De Laval G, I and K Single Stage Double Suction Pumps have a capacity range of 175 gpm to 6,000 gpm, and heads to 300 feet. They are available in sizes ranging from 4" suction and 3" discharge to 14" suction and 12" discharge. Write for Bulletin 1002.

DeLaval also furnishes larger centrifugals for capacities up to 70,000 gpm.

DE LAVAL *Centrifugal Pumps*

DE LAVAL STEAM TURBINE COMPANY

860 Nottingham Way, Trenton 2, New Jersey

DL 198

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ELEVATING and CONVEYING

F 85 ALLOY CAST STEEL BUCKETS

Finest Name in Cast Steel!

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HIGHEST QUALITY ELECTRIC FURNACE CARBON AND ALLOY STEEL CASTINGS

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F-C HARD EDGE STEEL CASTINGS

F85 STEEL CASTINGS

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ELEVATOR, CONVEYOR PARTS Sprockets, Traction Wheels, Chains, Buckets, Rollers, Idlers, Bushings.

GEARS AND PINIONS "True Tooth" Gears and Pinions, Sheaves and Wheels.

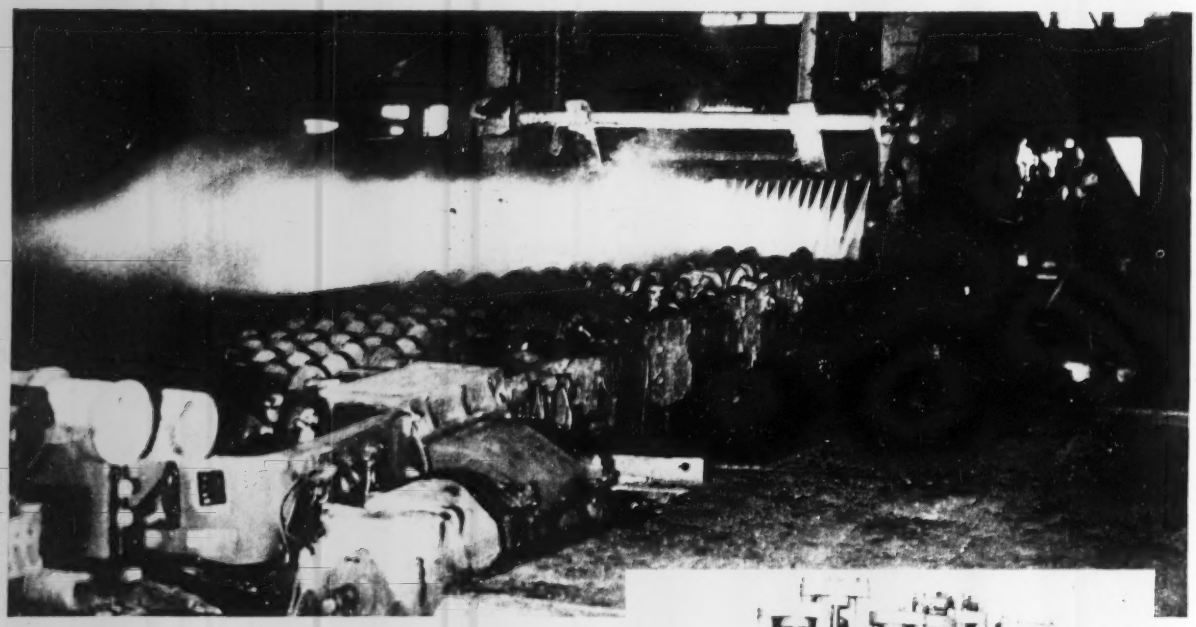
CRANE WHEELS Overhead, Gantry, Monorail, Ingot Car, Charging Machine.

STOKER PARTS Feed Screws, Furnace Tools, Flanged Pipe, etc.

HEAVY HARDWARE Complete Line Wire Rope Fittings and Cutters, Bar Benders and Cutters.

YOUR INQUIRY WILL PROMPTLY BRING DETAILED INFORMATION PERTAINING TO ANY OF THE ABOVE FARRELL-CHEEK PRODUCTS

SANDUSKY, OHIO



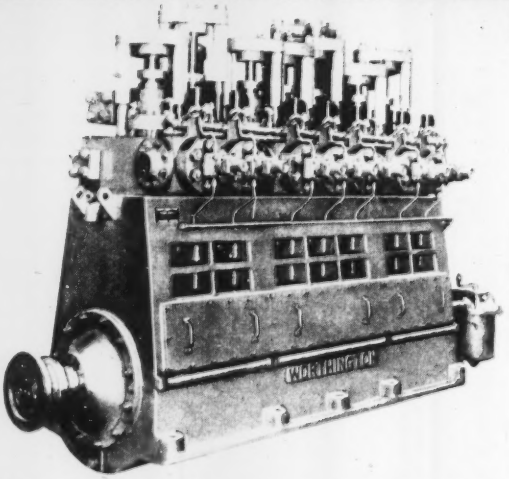
High-pressure water descales thousands of tons of steel daily

It takes vast quantities of high-pressure water to remove the scale from steel sheets, plates and billets going through rolling mills like the one shown above.

To deliver high-pressure water for this kind of work, more and more leading names in industry are specifying Worthington heavy-duty multi-plunger power pumps. Here are some of the reasons why:

Worthington's patented synchronized suction-valve unloading allows delivery to start or stop as often as you want, quickly but gradually, without any shock or disturbance.

Ceramic plungers, optional on all of Worthington's power pumps, are precision-made for complete and easy interchangeability. As hard as tungsten carbide, these plungers resist corrosion, abrasion and breakage.



WORTHINGTON HEAVY-DUTY MULTI-PLUNGER POWER PUMPS deliver high-pressure water for use in hydraulic descaling system in this rolling mill. These rugged pumps are also used in hydraulic press work, foundry cleaning systems, hydrostatic testing and high-pressure process pumping.

Individual valve-hole covers permit quick and easy access for valve maintenance without disturbing piping.

Get all the facts about these dependable, long-lived pumps. Write for the free Power Pump Bulletin, W-415-B1, to Worthington Corporation, Reciprocating Pump Division, Harrison, N. J.

P-3.6

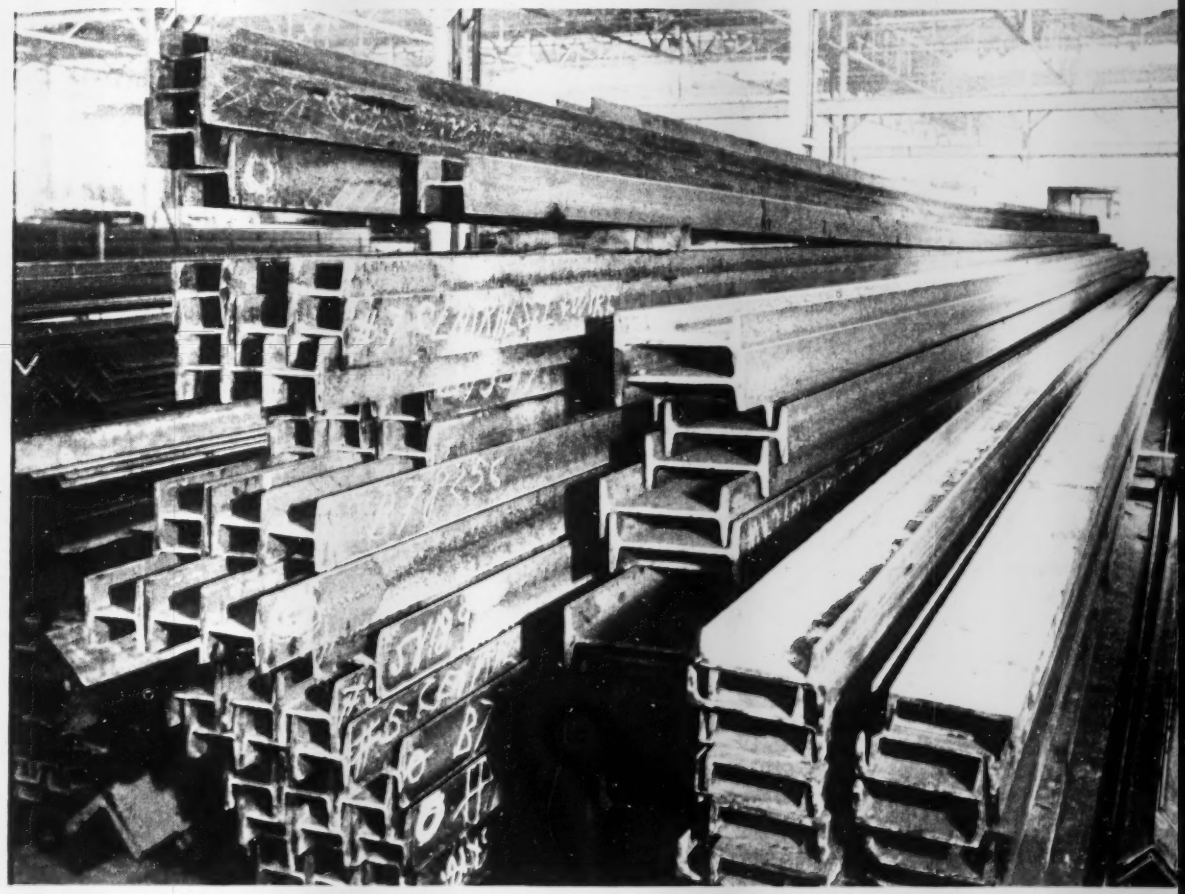
The World's Broadest Line Assures You the Right Pump for Every Job

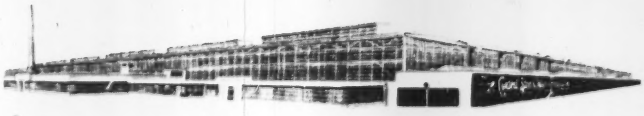
WORTHINGTON

Power Pumps

TONNAGE *is no problem . . .*

at CENTRAL STEEL AND WIRE COMPANY





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carbon and alloy steel, stainless, copper
brass, aluminum . . . prompt delivery
accurate cut-to-order service
flame cutting, sawing, shearing, slitting
to exact specifications

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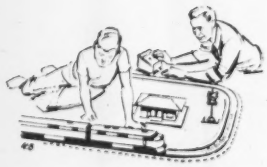
METALS AT WORK

Copper "package" for the coldest products on earth

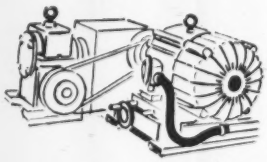
This container for storing and transporting liquefied helium (−452 F.) or hydrogen (−421 F.) is made by Superior Air Products Co. of Newark, N. J. The secret of keeping heat out to reduce evaporation is four concentric copper spheres separated by a high vacuum space, a nitrogen protecting bath, and a second high-vacuum space — the entire unit enclosed in a stainless steel casing. Copper contributes ductility and malleability for spinning into hemispheres, unexcelled soldering properties for joining into spheres, and a mirror finish to reduce radiation losses. Need we tell you that it's made of ANACONDA Copper?

This "iron horse" runs on brass



The "High Iron" we're referring to is the HORNBLINE HO-GAGE model railroad track which John A. English & Co. of Morrisville, Pa., makes of FORMBRITE** strip. This fine-grain, yet ductile forming brass produces a track so strong and stiff it will support an adult's weight. In products where finishing costs count, users find that FORMBRITE usually needs only a color buff to produce a high finish.

Flexible conduit enjoys a splash in a bath



The real trick is to make an electrical conduit that's flexible *and* liquid-tight *and* approved by Underwriters' Laboratories for such applications. SEALTITE* Type UA does all three. Made with a tough synthetic jacket extruded over a flexible steel core, it's shown here protecting wiring to motor in an auto laundry. It ignores not only splashing, but also oil and grease, and resists abrasion. Want more facts?

We put an end to "the bends"

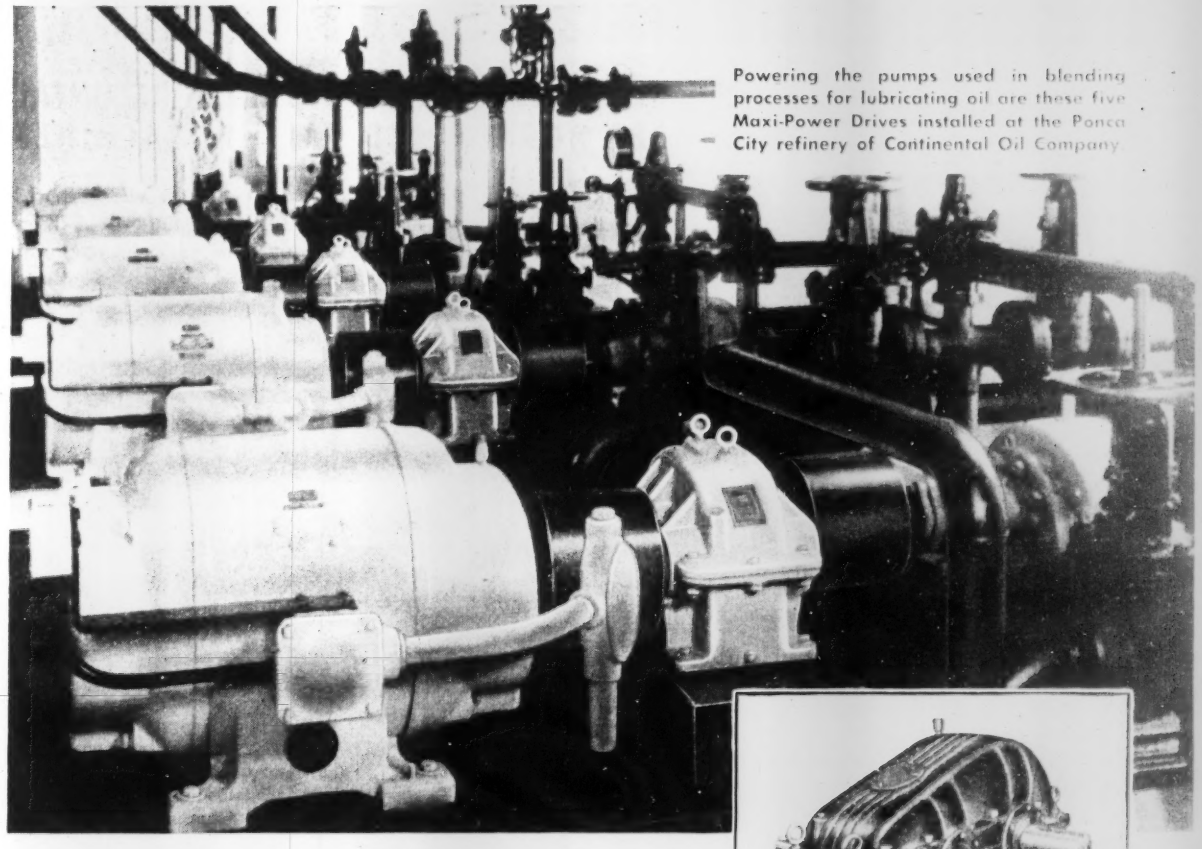
We don't mean the kind deep-sea divers suffer from, but the kind heating contractors had to put up with when they installed radiant panel heating systems. Heretofore, many contractors formed the panel grids on the job by hand-bending them from coils of tubing — a time-consuming, laborious, back-breaking job. Now PG's** have ended all that. They are the new, compactly packaged, accurately *preformed* ANACONDA Copper Tube Panel Grids . . . from the handy carton to installation is only a matter of minutes. PG's are another ANACONDA first.

A service for you

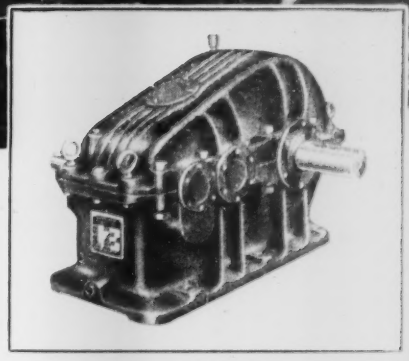
Our Technical Department has a range of experience that covers the entire field of copper and copper-alloy applications in industry. If you have a problem of metal selection, we are at your service. *The American Brass Company, Waterbury 20, Conn. In Canada: Anaconda American Brass Ltd., New Toronto, Ont.*

*Trademark
**Reg. U.S. Pat. Off. 5393

ANACONDA® *the name to remember in* **COPPER — BRASS — BRONZE**



Powering the pumps used in blending processes for lubricating oil are these five Maxi-Power Drives installed at the Ponca City refinery of Continental Oil Company.



MAXI-POWER

They Thrive on Heavy Duty

This Trademark Stands for the Finest in Industrial Gearing

Any drive will do a good job the first day, but how will the record read after a month — a year — five years?

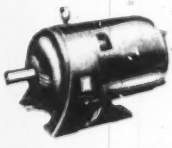
Will it — like Foote Bros. Maxi-Power Drives — still have the stamina to handle high horsepowers for hardest, day-after-day service? Will its maintenance costs remain low? Will efficiency still approach 100%?

And when you're deciding on a drive, is space a crucial factor? Maxi-Power's superior gearing is designed into the most compact housing to assure maximum load-carrying capacity in minimum space for heavy-duty units.

Sturdy — reliable — Maxi-Power Drives provide years of better performance for the most rugged applications. Available with single, double or triple reductions in sizes to meet your requirements. Ratios range up to 360 to 1, capacities up to 1,550 h.p.

Call your Foote Bros. representative, or write for detailed information.

Line-O-Power Drives



Foote Bros.-Louis Allis Gearmotors

Hygrade Drives

FOOTE BROS.

Better Power Transmission Through Better Gears

FOOTE BROS. GEAR AND MACHINE CORPORATION
Dept. X, 4545 South Western Boulevard, Chicago 9, Illinois

Please send Bulletin MPB containing full information about heavy-duty Maxi-Power Drives.

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Company .....

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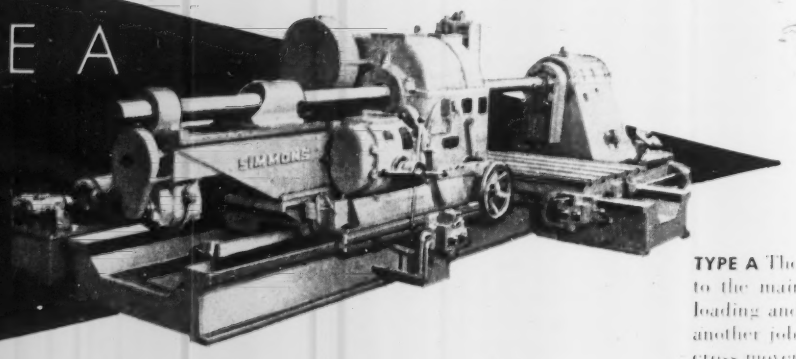
EXTREME ACCURACY...HIGHER CUTTING SPEEDS...FASTER STOCK REMOVAL...

WITH SIMMONS 6" AND 8" BAR HORIZONTAL CYLINDER BORING AND FACING MACHINES

Power and rigidity...these Simmons machines have all you need to push carbide tooling through a full range of speeds and feeds. They're the production engineer's answer for large diameter cylindrical boring and facing jobs for steam turbines, diesel engines, centrifugal pumps, refrigerating machinery, compressors and the like.

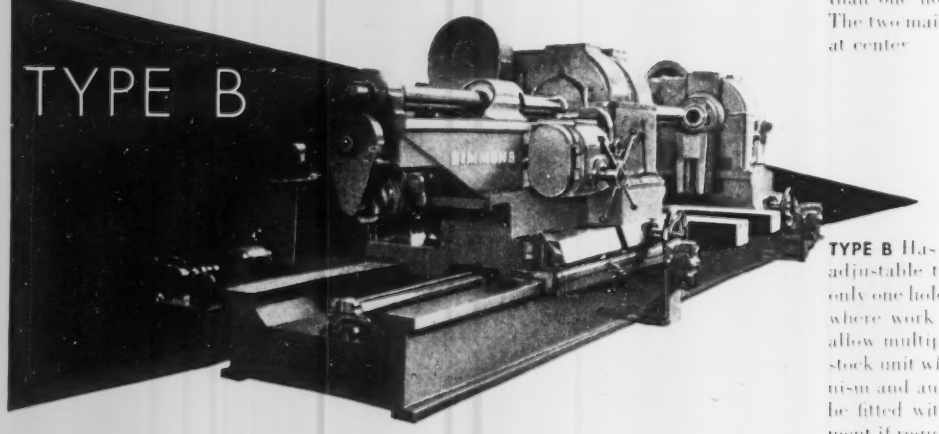
The entire boring and facing unit on these Simmons machines is moved hydraulically along the bed; the boring bar has a mechanical screw feed; a power take-off for the feed gearing on the continuous feed facing head eliminates the usual star feed device and permits use of high-speed cutters for facing; an electrically-operated clutch disengages or reverses feed drive at any point.

TYPE A



TYPE A The traverse bed at right angles to the main bed allows 1: setting up, loading and unloading of one job while another job is being bored or faced; 2: cross movement of work on which more than one hole is to be bored or faced. The two main beds join this traverse bed at center.

TYPE B



TYPE B Has single in-line bed with two adjustable tables. Recommended where only one hole is to be bored and faced, or where work is too large or unwieldy to allow multiple mounting. Has one headstock unit with boring and facing mechanism and auxiliary headstock which can be fitted with boring and facing equipment if required.

BOTH TYPES are of "unit-type" construction and, to meet your particular production requirements, modifications can be made in specification of swing, bar diameter, bar length, bed length, table area and travel or spindle speeds.

Write, wire or phone today for complete engineering information.

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New York Office: 50 East 42nd Street
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SIMMONS FOR THE LARGE SPECIAL MACHINE TOOLS THAT OTHERS SELDOM BUILD

stainless steel bar users :

Get all three at CRUCIBLE

faster *delivery* —

Our unique mill scheduling operation is geared to handle any size order for stainless steel bars — whether it be for pounds or carload lots. And we operate our own national chain of warehouses to enable us to make immediate shipments to you directly from a local source over which we maintain complete control.

maximum *machinability* —

Recognizing the importance of good machinability, our mill metallurgists maintain close control over all manufacturing operations to insure that the machinability characteristics of each stainless bar produced is of the maximum obtainable.

complete *range* —

All our warehouses now have complete stocks of stainless and heat-resistant bars . . . in all sizes, all grades and all finishes. No matter what your requirements are in the way of stainless and heat-resistant bars we can take care of them.

Next time you need stainless steel bars, be sure you call your nearest Crucible warehouse.

CRUCIBLE first name in special purpose steels

53 years of Fine steelmaking

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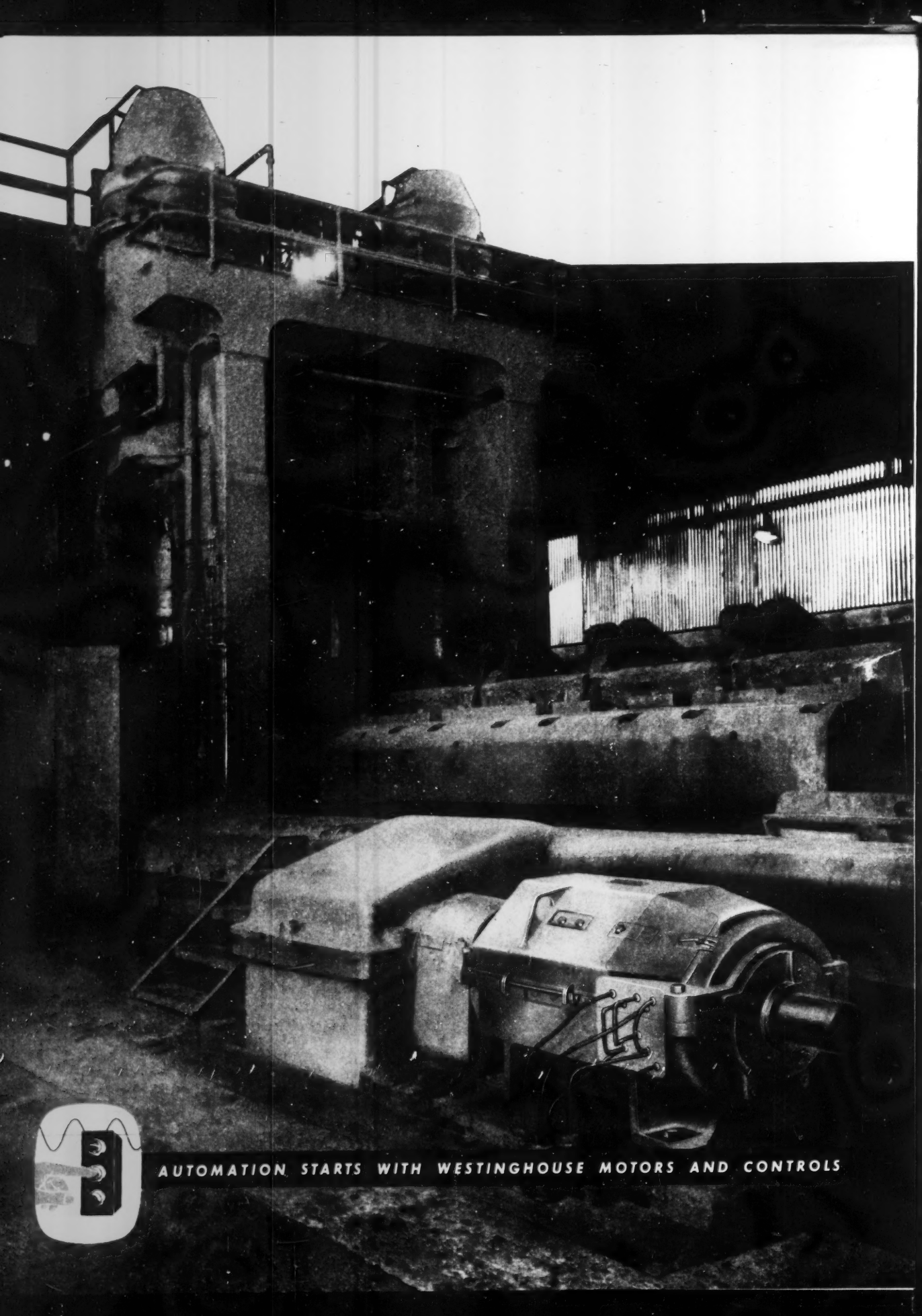
REX HIGH SPEED • TOOL • REZISTAL STAINLESS • MAX-EL • ALLOY • SPECIAL PURPOSE STEELS


AUTOMATION STARTS WITH WESTINGHOUSE MOTORS AND CONTROLS

Here's how Westinghouse motors and controls cope with tough mill drive jobs

Watch a white-hot, ten-ton ingot rumble back and forth through the rolls of a slabbing mill. Can you sense the split-second, make-and-break actions of electrical controls . . . the stresses that grip motors at the mill table, on "screw-down" apparatus, or the manipulators?

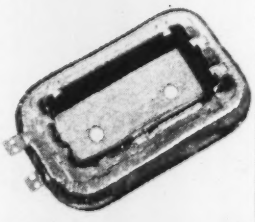
Westinghouse engineers sensed and actually measured these wearing forces in order to build rugged dependability into d-c mill motors and matched controls. You can see the results in the specially constructed armature of the Westinghouse series 600, d-c mill motor. Its low inertia allows the motor to start—stop—and reverse the heaviest load in a split second, providing high-rated efficiency . . . maximum performance.

Examine the Westinghouse Type M Contactor, too. Located at the heart of many mill drives, it withstands millions of make-and-break actions. To reduce wear, a friction-free, knife-edge bearing supports the contactor armature . . . "quick-quench" arc box protects contact life. For rapid cyclic drive operations, a strong kickout spring gives fast action in opening contacts.

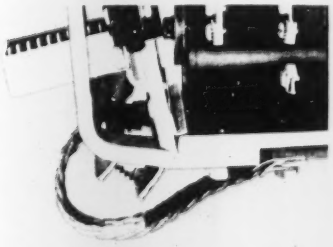
In constructing tougher d-c motors, Westinghouse uses a heavy-duty steel motor frame and brackets. For sounder insulation, field coils are individually assembled and wrapped. Placed around a steel shell and insulated, they form a solid mass protected from chafing or grounding. Cast-brass, interchangeable, brushholder adds long life, too.

Investigate Westinghouse mill motors and controls. Ask your local Westinghouse salesman for booklet B-5650; or write Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Penna.

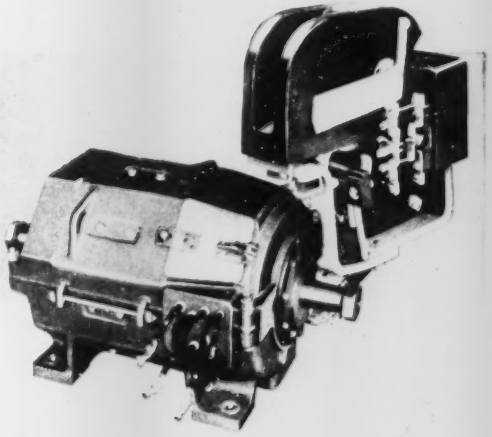
J-21785



Solid field coil construction resists mechanical or electrical shock. A steel washer, placed on top of the coil and tack welded to lips of the inner steel shell, holds coil and shell in a rigid assembly. Coil unit is then vacuum impregnated in Thermoset varnish.



Knife-Edge Bearing—Type M Contactor armature operates on a fulcrum of specially hardened steel. There are no hinge pins to wear—corrode or cause trouble by jamming. Dust will not collect at this point as it is worked out of the bearing by pincer action.



YOU CAN BE **SURE**... IF IT'S

Westinghouse

end corrosion troubles with **HARPER** everlasting fastenings

Will the fastenings you use last the life of all equipment you manufacture?

Are they selected to defy the ravages of severe weather—salt spray—corrosive acids—destructive electrolysis?

Many manufacturers have found the small additional cost of Harper Fastenings is more than offset by the better service they render—by the prevention of equipment failure—by the improved satisfaction of customers.

Harper specializes in Everlasting Fastenings of all corrosion-resistant metals. More than 7,000 different items are carried in stock. Harper metallurgists and engineers stand ready to assist you in the development of special fastenings ——to solve production problems——to assure product improvement.

Standardize on Harper—secure these advantages: one order to write, one account to keep, one bill to pay. Call the Harper Branch Office or Distributor in your area.

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CORROSION-RESISTANT FASTENINGS

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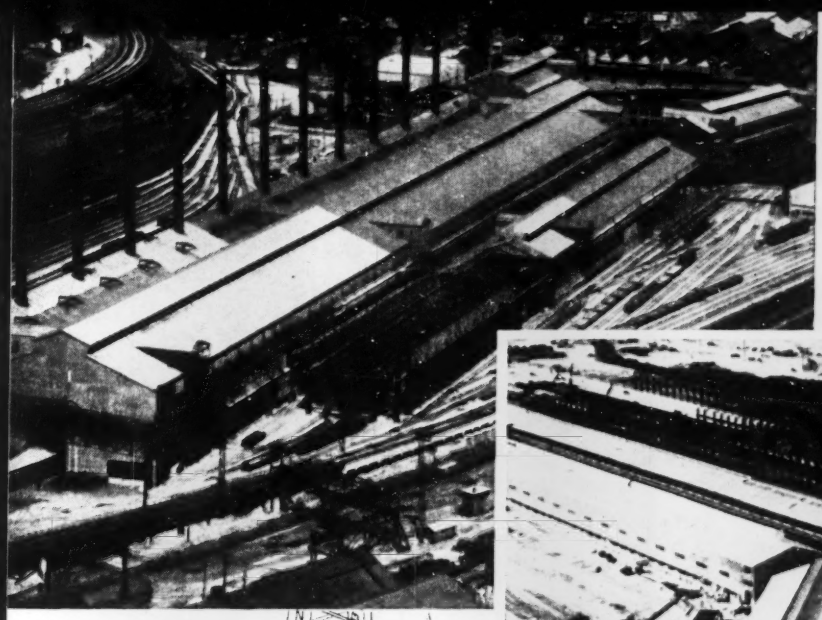
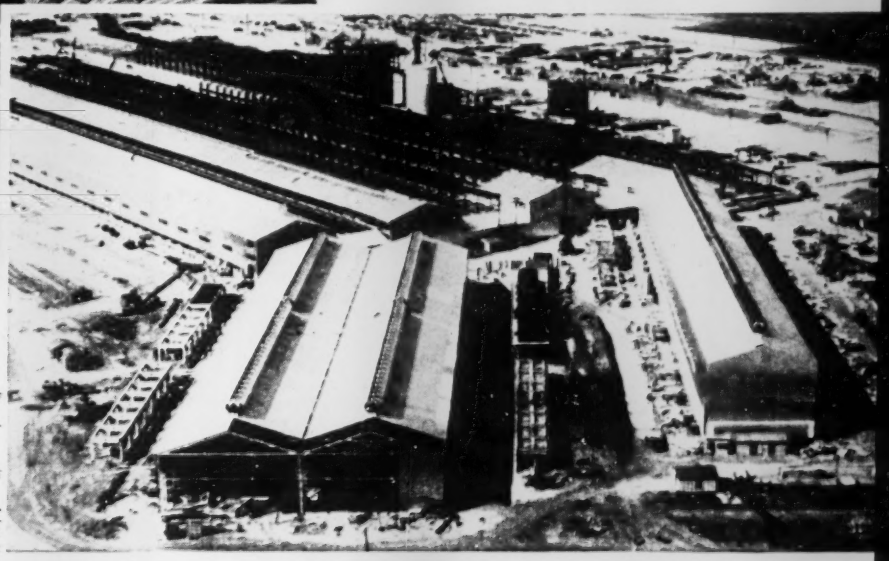
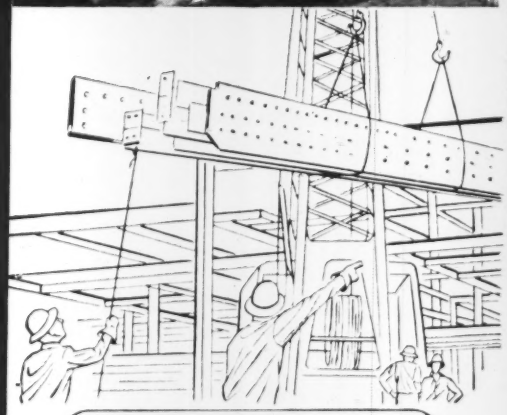


JONES & LAUGHLIN STEEL CORPORATION'S multi-million dollar expansion project on Pittsburgh's South Side.

• • •

REYNOLDS METALS COMPANY, San Patricio Plant, Corpus Christi, Texas, for increased production of aluminum.





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lends a helping hand

as nation's essential industries continue to expand!

LESS spectacular than city skyscrapers, but just as important to our nation's defense and economic growth, are the unheralded industrial buildings which have been built or are now under construction all over this great country of ours.

Of the thousands of such steel-frame structures built by American Bridge, we are perhaps proudest of those we have done, or are now working on, for vital industries. Included in this group are many important metal producers.

To be selected by these leading steel and aluminum producers is a splendid tribute to the engineering, fabricating and erecting know-how of the American Bridge organization.

It is also your assurance that American Bridge has the fabricating facilities, erecting equipment and skilled personnel to handle any type of steel-frame construction with exacting precision, thoroughness and speed . . . any time, anywhere.

If you would like to know more about the advantages of American Bridge fabricated and erected steel construction, call our nearest office.

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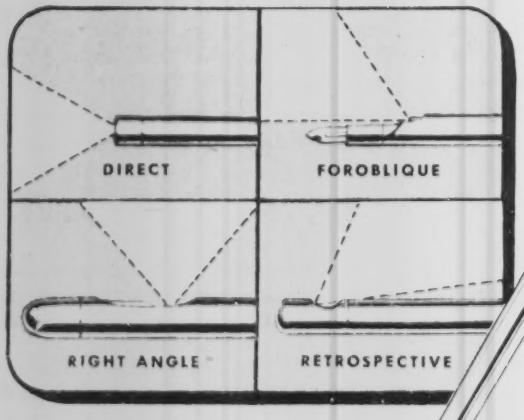
TIME SAVED—MONEY SAVED

A.C.M.I. BORESCOPES



A.C.M.I. Borescopes are available in 4 angles of vision (as above) in diameters of .120" to 4.00" in lengths of 4" to 720". Special models for special problems.

The A.C.M.I. Borescopes permit close-up visual examination of interior areas and surfaces not otherwise visible. They save time and money, and prevent costly dismantling, by providing a practical solution to a wide variety of inspection problems.

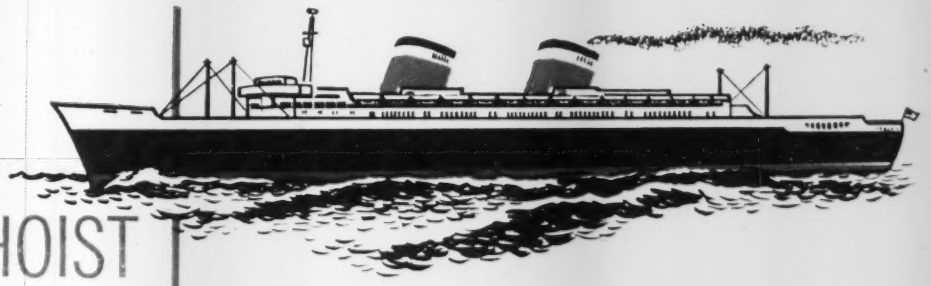
In maintenance and inspection work, on small internal bores, machine parts or castings, to large boiler tubes, chemical plants, process equipment, or other industrial installations, an A.C.M.I. Borescope may be the answer to *your* problem.

Each Borescope is a compact, self-illuminated industrial telescope of highest quality, employing a precision optical system, that produces a flat visual field. Lens systems are fully corrected for color, spherical aberrations, and coma, with all lens surfaces coated to increase light transmission.

Write for free informational folder, or tell us your problem.

American Cystoscope Makers, Inc.

1241 LAFAYETTE AVENUE NEW YORK 59, N. Y.

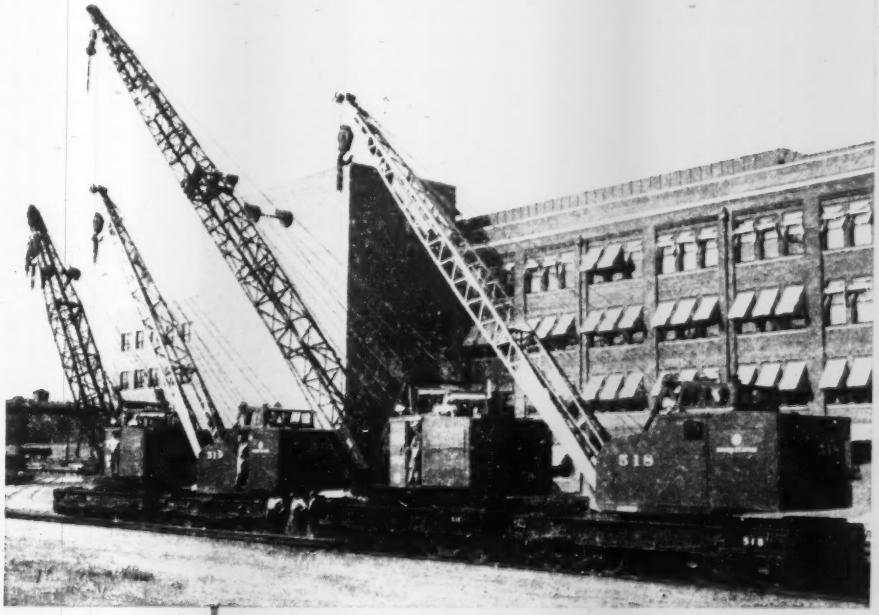


BROWNHOIST

CRANES help build the S.S. United States and other big ships for Newport News Shipbuilding and Drydock Co.

One of the largest shipbuilding and ship repair yards in the world, Newport News Shipbuilding and Drydock Co., designed and built the huge luxury liner, S. S. United States. They also build, convert and repair naval and merchant vessels of all types. For the many difficult materials handling operations this work entails, they need efficient and dependable equipment. That's why this company maintains a fleet of modern Brownhoist Diesel Electric Locomotive-Cranes.

Brownhoist Cranes perform equally well as switch engines or cranes operating with magnet, hook or bucket. Monitor Type Cab and Clear-Vision Boom give the operator full 360° visibility. Rugged construction, simplified mechanism, and easy accessibility to all moving parts help keep maintenance and repair costs low. In railroads, steel mills, mines and large manufacturing plants, Brownhoist Cranes are saving production time and money. They are built in capacities from 25 to 80 tons for virtually every materials handling operation. For complete information, consult your nearest Brownhoist representative or write us today.

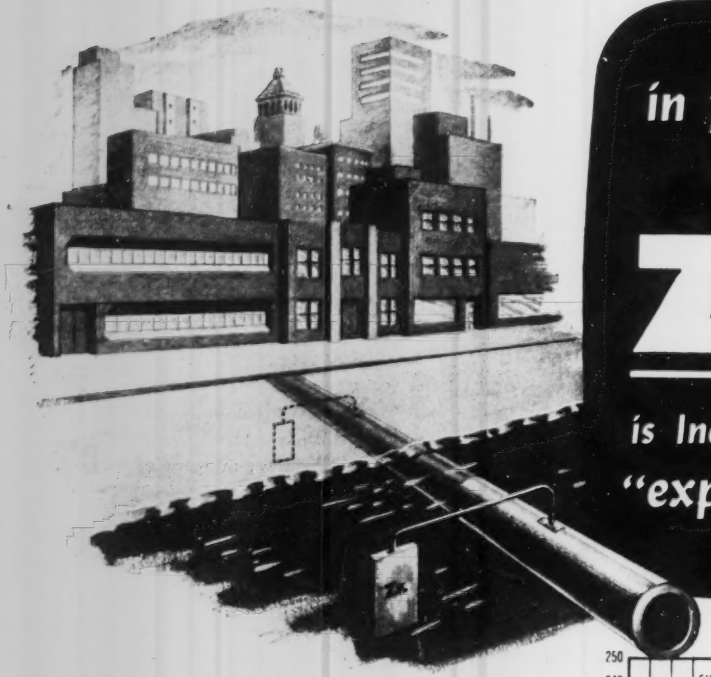


172

BROWNHOIST
builds better cranes

INDUSTRIAL BROWNHOIST CORPORATION • BAY CITY, MICHIGAN

DISTRICT OFFICES: New York, Philadelphia, Cleveland, San Francisco, Chicago; Canadian Brownhoist, Ltd., Montreal • AGENCIES: Detroit, Birmingham, Houston, Los Angeles



in fighting corrosion with corrosion—

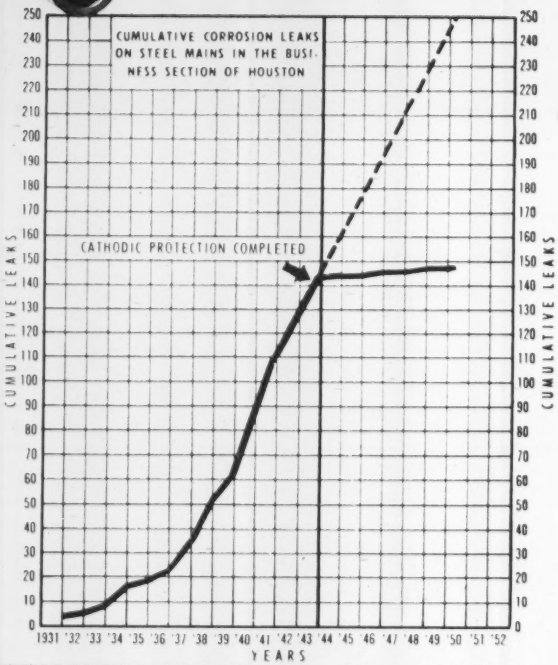
ZINC

is Industry's most effective "expendable" weapon!

NEARLY 50% of all the zinc consumed annually in the United States — around 400,000 tons — is used in galvanizing, i.e., protective zinc coating on iron or steel. This is ample evidence of the metal's firmly established position as industry's most effective and economical "sacrificial" weapon in its unceasing combat with rust. The electrochemical reaction between iron and zinc in galvanizing is precisely the same as that which takes place in the relatively new and growing use of zinc for cathodic protection of pipe lines and other underground iron and steel structures. The sole difference between the two methods being that in cathodic protection the zinc, in the form of anodes, is buried adjacent to a pipe line and connected by a conductor, while in galvanizing the zinc is bonded to iron or steel. In either form, zinc "protects"—as has been attested to by those progressive companies who have used zinc anodes for this purpose. For example in the northwest, a utility company reports:

> *"The most interesting installation was made in 1942 on four inch bare pipe located in the seepage from an irrigation ditch that circled the brow of a hill in such a manner that the pipeline trench intersecting the irrigation ditch was kept moist throughout the season. Approximately seven hundred feet of this four inch line had been replaced twice. In the spring of 1942 leakage developed and when the pipe was uncovered it was found to be in bad condition. Pending replacement, repairs were made and seventeen zinc anodes were installed with series-parallel connections. In the press of other work, this replacement job was put aside and in 1943 it was found that no further leaks had developed. In 1948 the replacement had still not been made and we were getting a good potential-to-ground and plenty of protective current. The last test made in the spring of 1950 shows a slight increase in the potential-to-ground and the pipe has not been replaced nor have we felt it even necessary to uncover it for visual inspection."*

The graph at right provides additional evidence from the State of Texas. Here are two examples, under widely dissimilar conditions, where zinc has proved itself as a highly efficient cathodic protector for underground pipe lines. This is not surprising in view of the long-recognized superiority of the metal in the field of galvanizing.


CUMULATIVE CORROSION LEAKS ON STEEL MAINS IN THE BUSINESS SECTION OF HOUSTON
CATHODIC PROTECTION COMPLETED
CUMULATIVE LEAKS
CUMULATIVE LEAKS
0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250
1931 '32 '33 '34 '35 '36 '37 '38 '39 '40 '41 '42 '43 '44 '45 '46 '47 '48 '49 '50 '51 '52
YEARS

EFFECT OF ZINC ANODE PROTECTION ON OLD LINES. *Most of the United Gas Corp.'s welded-steel-gas distribution mains, coated with hot asphalt and asbestos wrapper, were installed before 1930. Cathodic protection of mains with zinc anodes was completed in early 1944. Curve shows cumulative leak record of these mains. Only 5 corrosion leaks occurred in the 6 years since cathodic protection was applied, comparing with 142 during 1932-1944.*

52 PAGES OF NEW DATA

For complete details on this application of zinc, write for free booklet, CATHODIC PROTECTION WITH ZINC ANODES

ST. JOSEPH LEAD COMPANY
250 PARK AVENUE, NEW YORK CITY 17

for Galvanic & Cathodic Protection Zinc is Standard

Zn

BUNKER HILL 99.99+% ZINC · ST. JOE High Grade ZINC

Among the many contractors who make these 50 caliber, 60 caliber and 20 m m brass and steel cartridge cases, a few use machines that are strictly special—designs that will be practically scrap value, so far as adaptability to other work is concerned, when the shell job is finished.

Many more millions of these shell cases are now being machined on

Standard 6 Spindle ACME-GRIDLEY Bar Automatics

Some of these standard machines are equipped with magazines loaded by hand, as on the job illustrated, others with fully automatic hopper feeds—reducing man hours to minimum.

And with simple carbide tools output is fast—in fact 1.5 seconds (2,400 per hour).

* * *

WHAT'S THE PAYOFF? Just this—when the job is done, Acme-Gridleys can quickly be retooled—good for years more service on peace-time parts production. Quite a difference in investment value and long terms profit.

Whatever your specific bar automatic needs today, consider also the value of these machines tomorrow—the importance of Acme-Gridley basic universal application and modern tooling ingenuity.

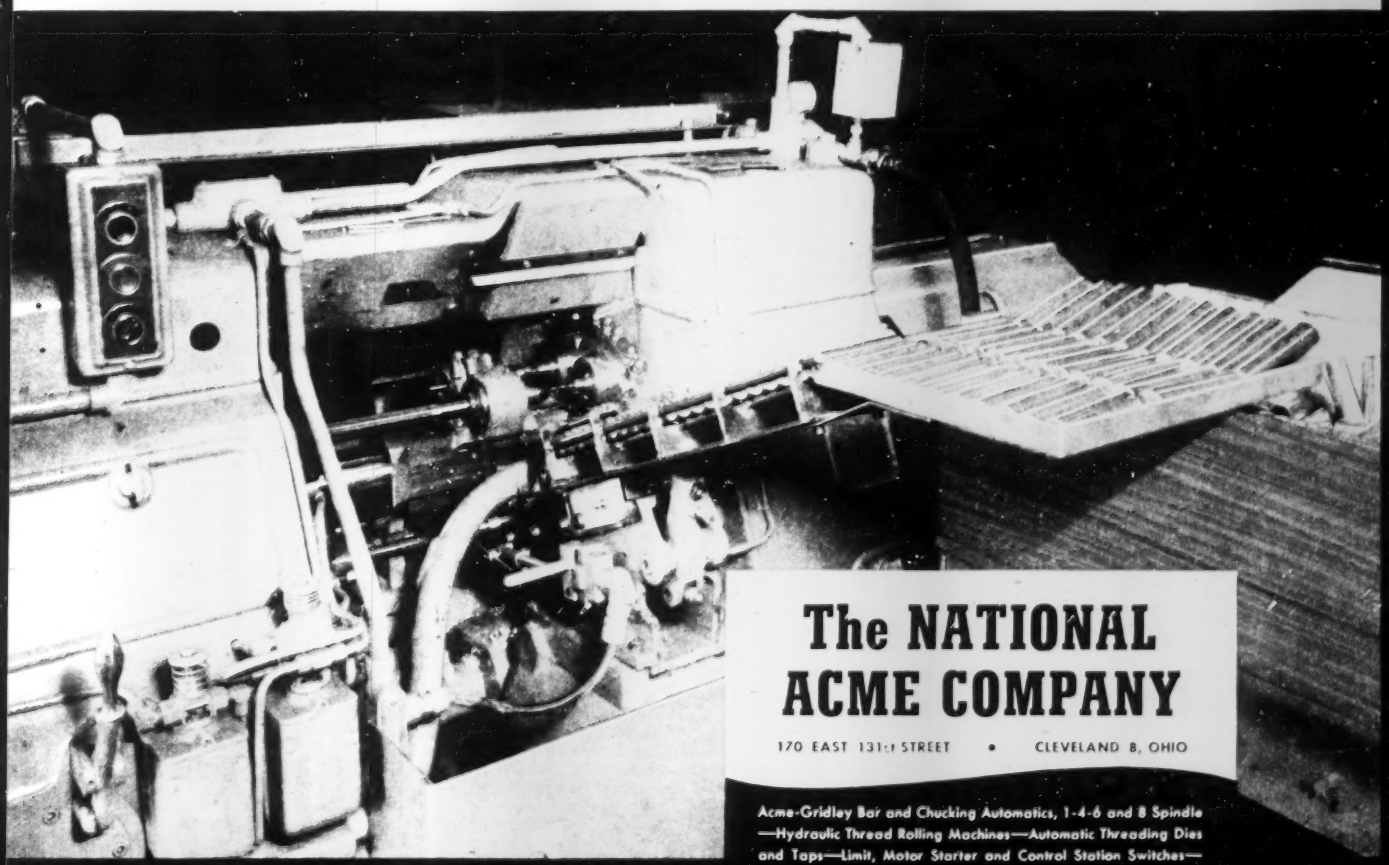
We've built more than 45,000 of them—in sizes up to 7¾" capacity.

here today...

BUT

what about tomorrow?

You can't do TODAY'S *job . . . with* YESTERDAY'S *tools . . . and be in business* TOMORROW



The NATIONAL ACME COMPANY

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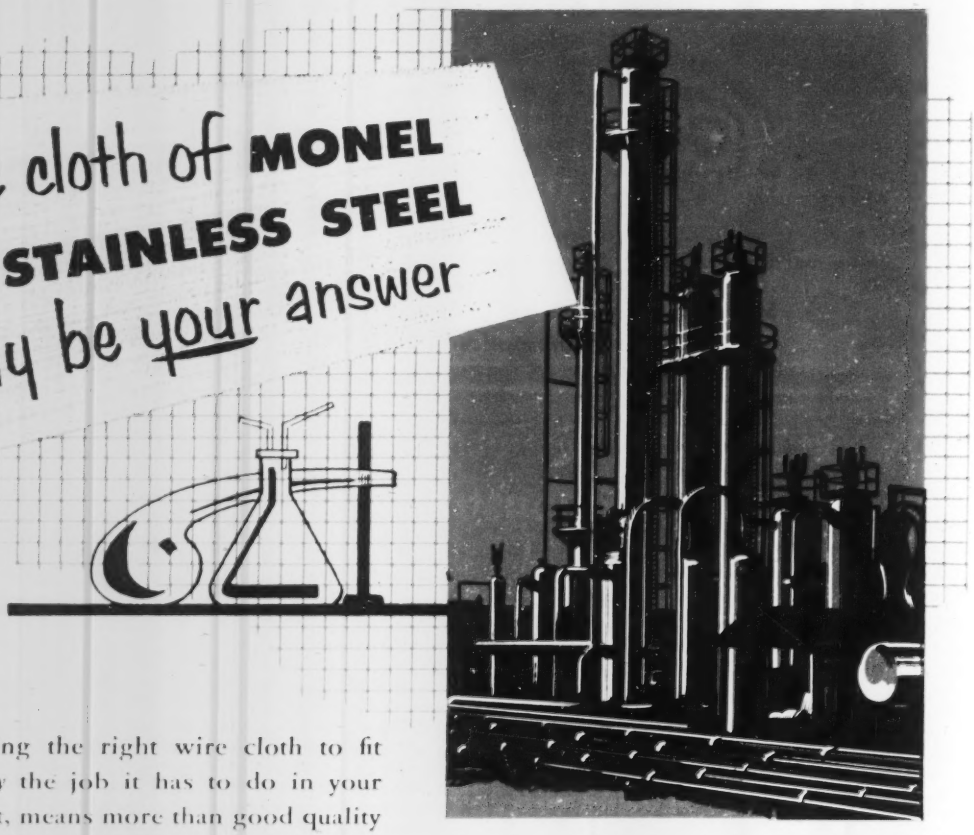
Acme-Gridley Bar and Chucking Automatics, 1-4-6 and 8 Spindle—Hydraulic Thread Rolling Machines—Automatic Threading Dies and Taps—Limit, Motor Starter and Control Station Switches—Solenoids—Contract Manufacturing.

wire cloth of **MONEL** or **STAINLESS STEEL** may be your answer



● Finding the right wire cloth to fit *precisely* the job it has to do in your product, means more than good quality and uniformity . . . more than the right type and size of wire, or mesh, or type of weave. It has to be right metallurgically and chemically . . . to prevent failures . . . to improve your product performance.

Reynolds stainless steel, or Monel metal cloth has a remarkable range of properties, in addition to resisting chemical and atmospheric corrosion. Stainless steel resists oxidation, and oxidizing solutions. It resists many acids; acid and alkaline salts; acetone, ethyl alcohol, benzene, chloroform, etc.

Stainless steel wire cloth as Reynolds makes it, is shock-resistant and non-magnetic, with good weldability . . . is strong enough to defy high temperatures and resist scaling; tough enough to take sub-zero temperatures to minus 320° F. *Consult Reynolds engineers.* No cost or obligation.

Reynolds WIRE CLOTH protects performance

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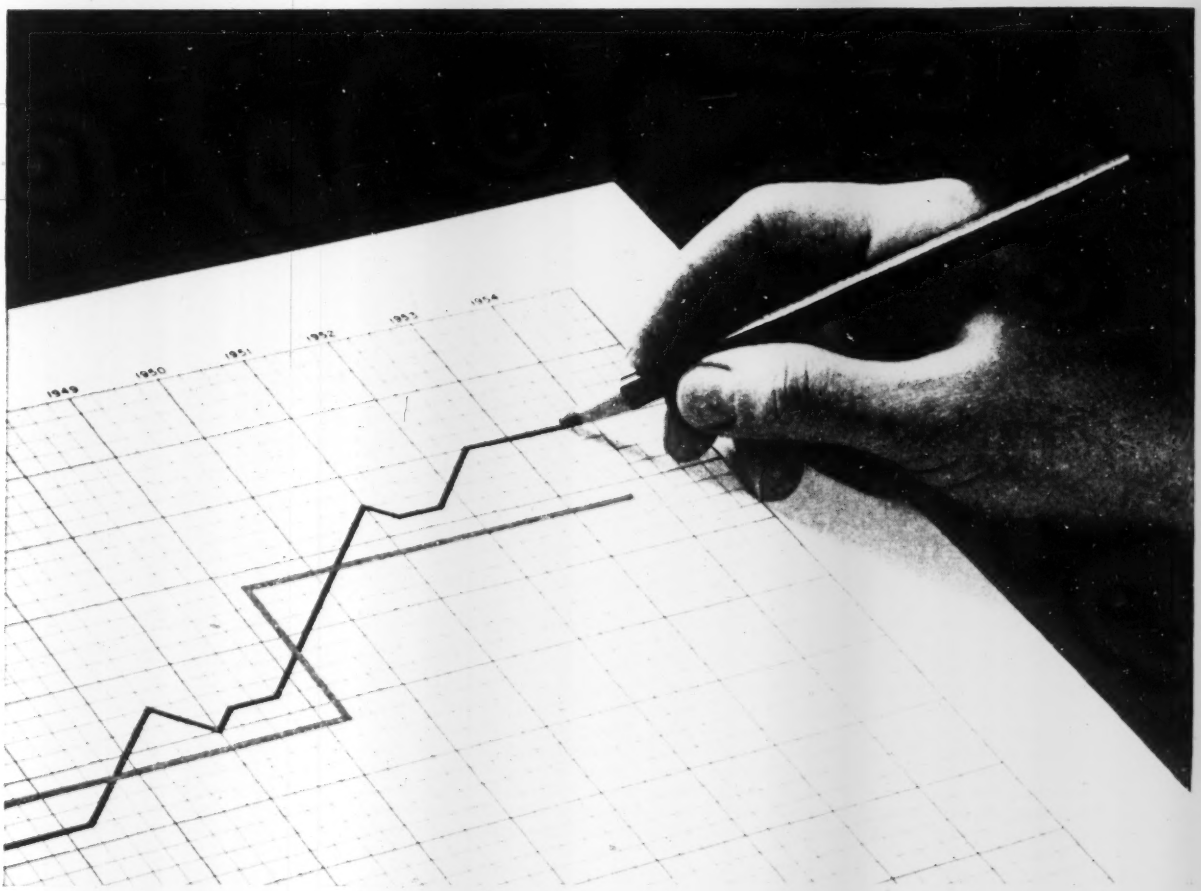

Caution: dangerous curves

Keeping your fire protection properly balanced with changes in processes as well as ups and downs in production is vital to efficient, profitable operation.

You'll find your best answer to this serious fire problem which is currently confronting industry by installing an expansible, fully approved C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing System. Simple piping, running from one centrally located storage tank, instantly transports clean, non-damaging, non-conducting carbon dioxide anywhere in the plant area. Fire at any protected location is extinguished in seconds with an absolute minimum of expense and interruption.

Changes in your fire protection requirements are easily and economically provided for with a C-O-TWO Low Pressure Carbon Dioxide Type Fire Extinguishing System by initially installing an oversized storage tank and adding where necessary the supplementary discharge facilities at a later date.

Flexibility is the keynote . . . the low pressure carbon dioxide storage tanks range in capacity from one to fifty tons . . . discharge facilities can be either manual mechanical, manual electric, automatic mechanical, automatic electric or a combination of these . . . especially installed to fit your particular needs.

WHEN BUSINESS STOPS . . . INCOME STOPS!

Don't take chances with your investment. Secure the benefits of highly efficient fire protection engineering today . . . our extensive experience over the years is at your disposal without obligation. Get the facts now!

C-O-TWO

MANUFACTURERS OF APPROVED FIRE PROTECTION EQUIPMENT

Squeez-Grip Carbon Dioxide Type Fire Extinguishers
Dry Chemical Type Fire Extinguishers
Built-In High Pressure and Low Pressure Carbon Dioxide Type Fire Extinguishing Systems
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in considerable quantities, you undoubtedly have asked yourself: "Couldn't we profitably *make* it ourselves?"

How much does a mill cost? What sizes will it make? Labor and operating skill required? Daily output in feet or tons? Break-even point of a mill? Strip supply? Power cost? Maintenance?

The new Yoder Tube Mill Book discusses these and other pertinent subjects. It's a realistic story of one of the most interesting developments in modern metal working . . . a development which started only 15 years ago, with the introduction of the amazingly efficient new Yoder electric resistance tube welder with rotating transformer.

Since then, the advantages inherent in the tubular shape, in looks, high strength and light weight, have profoundly affected product design, and so multiplied the uses that the demand has always been three steps ahead of the supply.

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Complete Production Lines

- ★ COLD-ROLL-FORMING and auxiliary machinery
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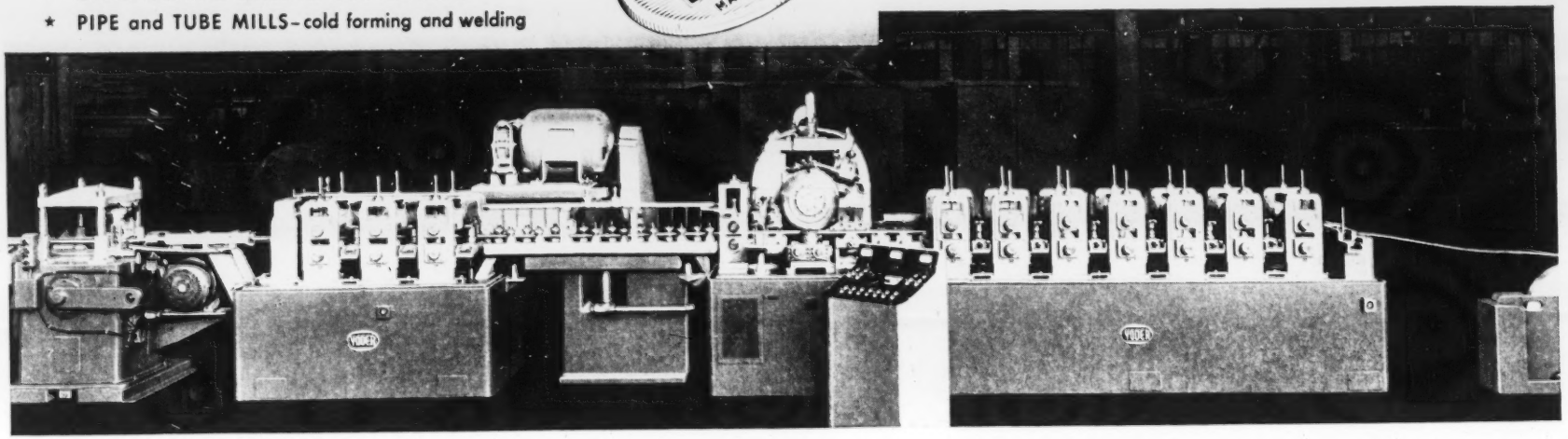

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YALE WORKSAVER ELECTRIC TRUCKS are the perfect solution where plant and warehouse facilities . . . or limited budgets . . . had previously ruled out mechanical handling operations. YALE WORKSAVERS lift, move and stack materials over low-load flooring . . . unreinforced ramps and elevators . . . freight cars and trucks . . . save time, space, manpower and money.

Industries of all kinds choose YALE WORKSAVERS because they know the YALE name and reputation. They count on the versatility of WORKSAVERS . . . to do the job better, more economically. Contact your local YALE Representative or complete the coupon for a demonstration. Ask about the complete range of attachments that makes the WORKSAVER the most versatile tool in your plant.

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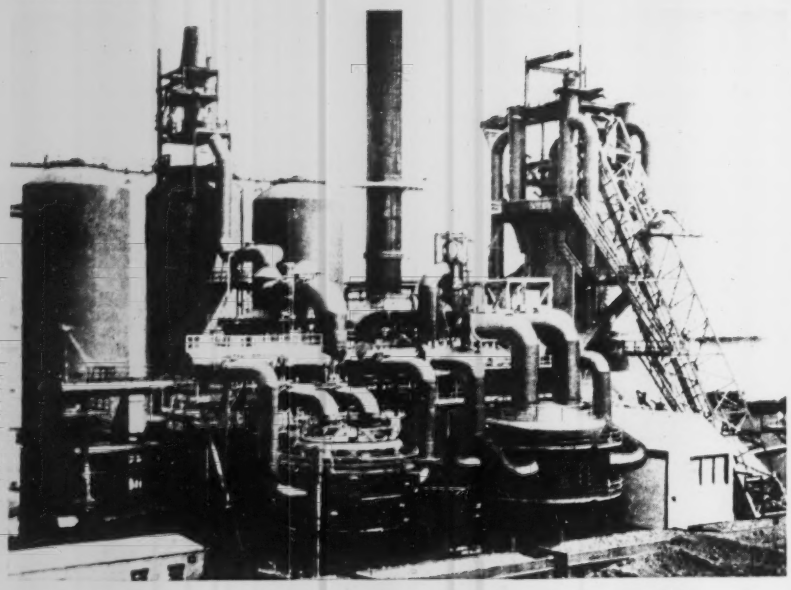


How Cottrell Precipitators Clean Gas in the Steel Industry

Iron Ore Sintering Plants

The first commercial Cottrell installation for cleaning gases coming from the iron ore sintering machines was placed in operation in 1952 with collection efficiencies exceeding 95%. In this installation the gases leaving the windboxes of the sintering machine pass to a flue, then to a mechanical collector, to the induced draft fans, to the precipitator, and then to stack. The gases enter the precipitator at temperatures of about 250 to 300F, with water vapor content of about 8%. The dust collected is dry and quite fine. The precipitators used on this application are of the horizontal steel plate type.

Iron Blast Furnaces

The cleaning plant in most iron blast furnace installations consists of the preliminary stage (dry dust catchers), the primary stage (water scrubbers) and the secondary stage (water-flushed Cottrell Precipitators). Dust and fume content of the gas is reduced to the range of 0.1 to 0.3 grains per cubic foot of gas corrected to standard conditions before it reaches the Electrical Precipitator. The function of the precipitator is to further clean this gas to a final dust content ranging in most cases from 0.005 to 0.01 grains per cubic foot, depending on how the gas is to be used.

Open Hearths

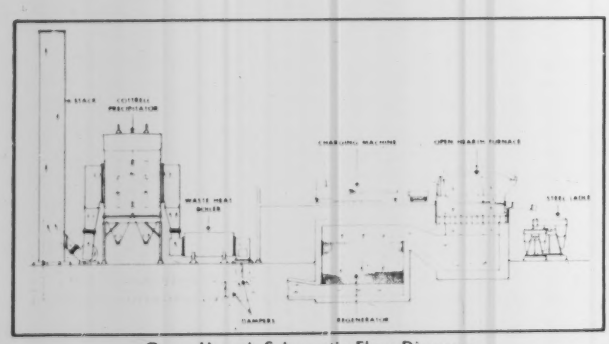
This problem involves the cleaning of combustion gases coming from furnaces, usually oil-fired, and carrying in suspension a heterogeneous mixture of very fine metallic oxides.

After extensive research and pilot plant studies, Research Corporation completed the first commercial precipitator installation for cleaning open hearth gases in 1951. Test results at rating indicated efficiencies of over 95% were obtained. Most of the time there was no visible discharge.

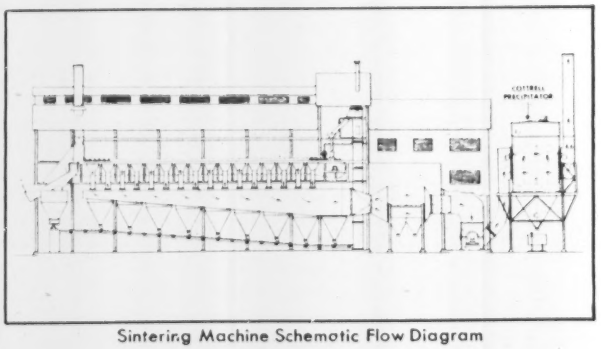
Other Steel Applications

In addition to the above, Research Corporation Cottrell installations are being used for detarring by-product coke oven gas, cleaning oven fuel gas and producer gas, and cleaning ferromanganese blast furnace gas.

Detailed information on all these applications is available through your nearest Research Corporation office.



Open Hearth Schematic Flow Diagram



Sintering Machine Schematic Flow Diagram

RESEARCH CORPORATION

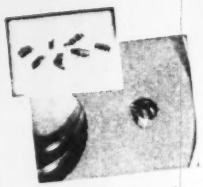
405 Lexington Avenue, New York 17, N. Y. • Bound Brook, N. J.

Grant Building, Pittsburgh 19, Pa. • 122 South Michigan Avenue, Chicago 3, Ill.

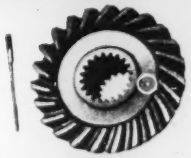
RC145

METAL DISINTEGRATION

and what it can do for you . . .

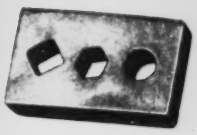


Remove Broken Taps fast without distortion

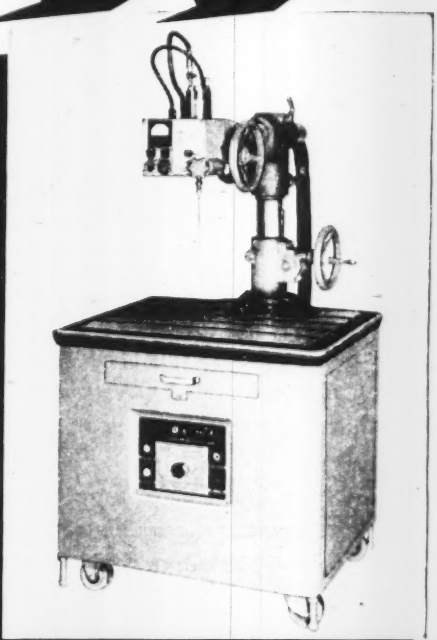


Cut oil holes in hardened gears without annealing

Cut dovetails in hardened dies



Cut any shape hole in cemented carbides



Literally hundreds of thousands of dollars are saved annually by corporations that are using Metalmasters in just tool and die repair alone.

There's a technical engineer in your area to give you an on-the-spot demonstration in your own plant at your convenience. (NOTE: It is not uncommon to pay for a Metalmaster with just one short demonstration thru savings on workpieces.)

For information as to the Metalmasters' uses and benefits merely write today on your company letterhead to:

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DIVISION OF CLINTON MACHINE COMPANY

CLINTON, MICHIGAN

Here are a number of crankshafts of various sizes and types. They will be delivered ready for installation with National Forge's guarantee of satisfactory performance.

FINISH MACHINING IS A SPECIALTY AT NATIONAL FORGE

NATIONAL FORGE has excellent facilities for the finish machining of forgings. Our 1260-foot main aisle and the side bays house a multiplicity of precision tools.

There is a full complement of lathes for both turning and boring in sizes from small bench lathes up to lathes of 72" swing and beds up to 120'; boring mills, vertical and horizontal; planers; radial drills up to 6'; surface grinders for flat work; cylindrical grinders for work up to 26" diameter and 50' long; shapers—horizontal, vertical and traveling head; milling machines—vertical, horizontal and planer type; a jig borer; pin-turning lathes for crankshafts; slotters, up to 36" stroke; and many other machines and tools designed for special work.

Our machinists are carefully trained over the years, and wherever your operation calls for special skill, these men are expertly adapted to your work.

When you have finish machining to be done on a forging, no matter how intricate or how close the tolerances, you can depend on National Forge to turn it out to your exact specifications.

We will be glad to quote on any job you have . . . and our Engineering Service is available to assist you if you desire.

National Forge
AND ORDNANCE COMPANY
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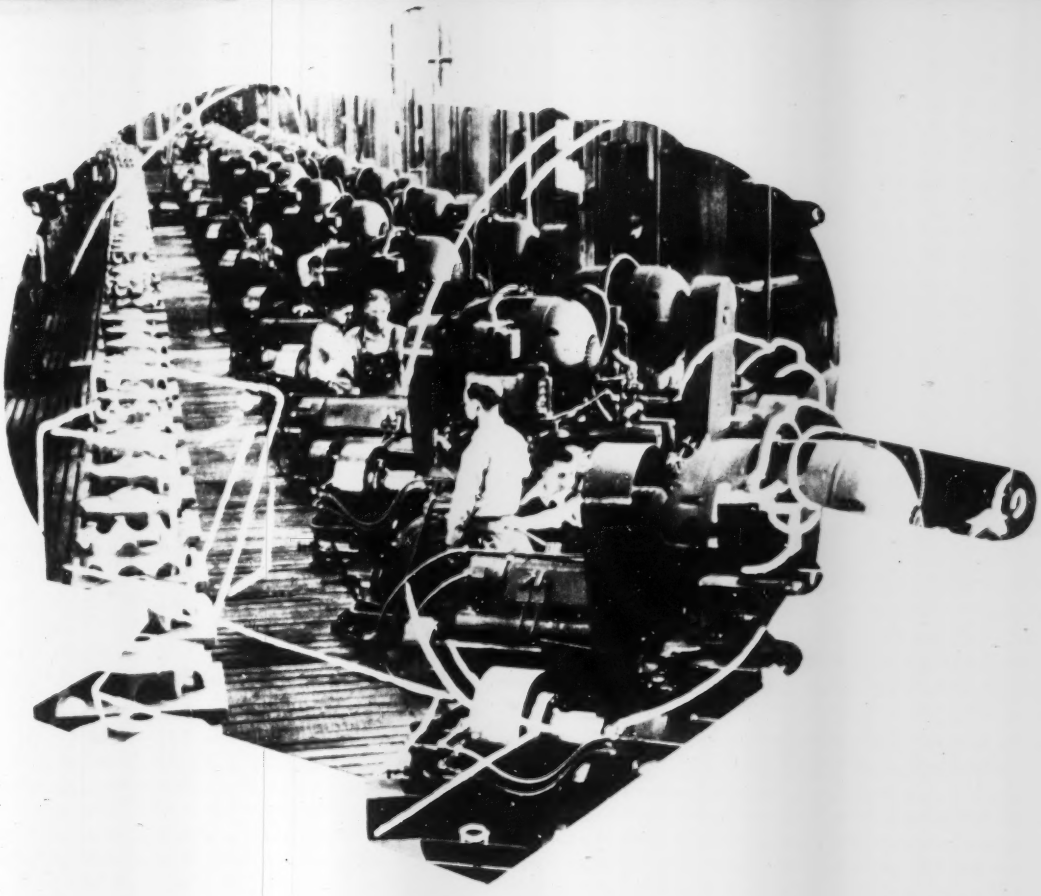


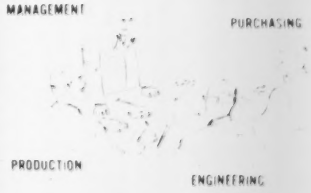
These 14 manufacturers of electric motors advertised in STEEL during 1952

If your product belongs in metalworking...

your advertising belongs in... STEEL

THE WEEKLY MAGAZINE OF METALWORKING

More *electric motors* are sold to the metalworking industry every year than to any other industrial market. Every one of the more than 17,000 plants reached by STEEL is a quantity buyer of motors either as a component in the machinery they produce or for replacement in their own production equipment. And that's why STEEL is the logical choice as the *basic paper* to reach the $111 billion metalworking industry. STEEL • Penton Building Cleveland 13, Ohio



You advertise in STEEL to reach all four buying influences

Saves time...money

All steel from one source

When you combine all your steel requirements on a single order to Ryerson you cut costs in many ways. One call — one order — save purchasing time and you also simplify bookkeeping — reduce clerical expense.

In addition, combining most carbon steel purchases under the Ryerson quantity differential plan brings further savings. And with larger quantities you often effect substantial reduction in freight on long hauls.

All these economies are possible when you call Ryerson for steel because Ryerson stocks are the world's largest and most diversified. Carbon steel, alloys, stainless — no matter what analyses you need, no matter what shapes and sizes, you can be practically certain of getting them all with just one call to Ryerson.

You can be sure of prompt delivery, too. So next time you need steel, no matter how many kinds or sizes, call your nearest Ryerson plant.

PRINCIPAL PRODUCTS

CARBON STEEL BARS — Hot rolled & cold finished

STRUCTURALS — Channels, angles, beams, etc.

PLATES — Many types including Inland 4-Way Safety Plate

SHEETS — Hot & cold rolled, many types & coatings

TUBING — Seamless & welded, mechanical & boiler tubes

ALLOYS — Hot rolled, cold finished, heat treated

STAINLESS — Allegheny bars, plates, sheets, tubes, etc.

REINFORCING — Bars & Accessories, spirals, wire mesh

BABBITT — Five types, also Ryertex plastic bearings

MACHINERY & TOOLS — For metal fabrication

RYERSON STEEL

JOSEPH T. RYERSON & SON, INC. PLANTS AT: NEW YORK • BOSTON • PHILADELPHIA • CINCINNATI • CLEVELAND • DETROIT
PITTSBURGH • BUFFALO • CHICAGO • MILWAUKEE • ST. LOUIS • LOS ANGELES • SAN FRANCISCO • SPOKANE • SEATTLE

STEEL
November 9, 1953

Metalworking Outlook

No Depression

The "average" economic forecast for the coming year, representing a composite of many predictions compiled by General Electric Co., shows this: A dip from mid-1953 to the end of 1954 of 17 per cent in industrial production, 7 per cent in gross national product and 4 per cent in disposable income. GE Marketing Vice President John L. Busey, speaking before a manufacturing conference of the American Management Association, sees no depression. Rather, 1954 can be a period of development through better profit per sales dollar, improved manufacturing costs, better pricing and intensified selling and advertising.

Sign of Saving

Manufacturers in 1954 can reduce their total payroll costs as much as 10 per cent—assuming no pay hikes—by eliminating overtime. The trend is already strong for reduction in the amount of time worked over 40 hours in a week. For example, in the bellwether state of Michigan, average hours worked in manufacturing plants during October, 1952, were 42.6. The time averaged 42.1 hours in January, 1953, and 41.2 hours in August 1953.

Shift in Inventories

About 5 per cent of steel production is currently going into consumers' inventories, down markedly from the 7 or 8 per cent stockpiling common last summer. Those inventories will be used freely in 1954 when there should be no problem of shortages. Because of that situation, use of steel in end products will probably amount to about 2 per cent more than actual production of the metal.

Nickel: Still in a Pickle

Most job platers are still using emergency specifications in their nickel plating despite the end of controls on the metal. Under free distribution platers hope to get nearly 30 per cent of their 1950 base period quotas. While that's better than the 25 per cent of base period allowed under controls, it's still not enough to permit job platers to meet the specification in effect in 1950.

Matter of Teamwork

Look for full-scale production of Hydra-Matics at Willow Run early in December. Initial output began last week, as earlier predicted in STEEL. Assemblies at Livonia before the fire were about 4500 units daily. More than 2300 machines were rebuilt by 356 machine tool builders and 18 GM divisions in record time to permit resumption of production only 12 weeks after the fire.

The Coming of Color

The advent of color video sets is dampening the sales of conventional television receivers. An estimated 6 million black-and-white units have been

The Technical Outlook—p. 111 The Market Outlook—p. 177

produced thus far this year—nearly equaling the 6.1 million built in all of 1952. But some 2.5 million are still unsold. Most of them are probably languishing in distributors' warehouses. Conventional set sales may pick up when the public realizes the price of color—at least $500 for a 21-inch unit.

Side Income

Coal chemical sales are becoming an increasingly important source of income for steel companies. For example, U. S. Steel Corp. is expanding its capacity to produce the products for the booming chemical industry. Coal tar distillation plants are being built at its Gary, Ind., and Fairfield, Ala., works. Total sales of coal chemicals reached about $275 million last year, nearly half of that made by steel companies. U. S. Steel is the leading seller in the ferrous field.

Made in Canada

Canada is gradually curtailing its defense spending in the U. S. Even so, it has still spent more in this country than the U. S. has spent in the dominion. Since Apr. 1, 1950, Canada has placed in the U. S. some $500-million worth of orders for military equipment, about 12 per cent of all its defense orders. In that same period the U. S. has placed orders in Canada for end items or components totaling some $400 million.

Straws in the Wind

This month, the Commerce department will start a new series of detailed figures to show how U. S. income groups line up; a valuable market research tool, the first group of figures will cover 1944-1950 . . . Clarence B. Randall's Commission of Foreign Economic Policy finds itself so divided on the tariff question that it will probably soft pedal that issue in its final report and concentrate on broader matters . . . Industry's real problems in replacing machinery and equipment are when and how to buy, rather than what to buy, claims S. D. Maddock, president of C. I. T. Corp., an industrial financing firm . . . Regional luxury note: California tops the nation in Cadillac ownership with 88,808 of those vehicles registered in 1952; New York was second and Ohio third.

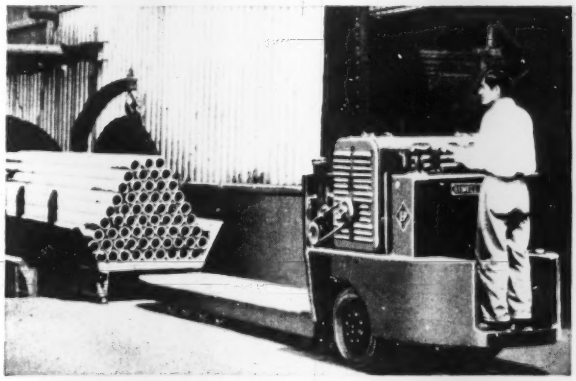
This Week in Metalworking

The full lunch pail will be organized labor's 1954 theme (p. 69) . . . The impact on equipment builders of the do-it-yourself trend among homeowners was shown at the spectacularly successful show for amateur repairmen and hobbyists in Chicago (p. 70) . . . Approval of a fast amortization certificate for a New England electric steel plant has been given, but location and financing of the facility is still uncertain (p. 71) . . . Already some Great Lakes ore carriers have been berthed for the winter as record stockpiles mount up (p. 72) . . . Machine tool sales should hit $1.2 billion in 1953 (p. 73) . . . For nine ways to get easier, faster defense contract termination, see p. 80.

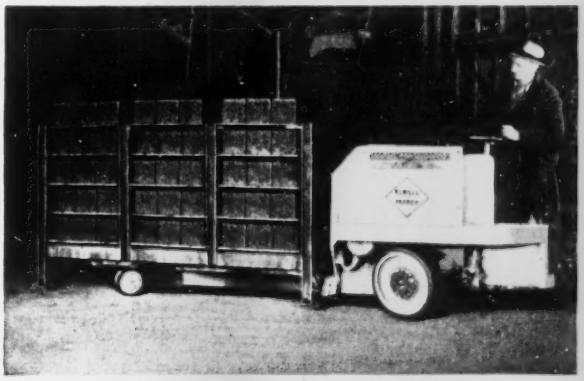
ELWELL-PARKER

Trucks Cost Less to Maintain

HERE'S PROOF

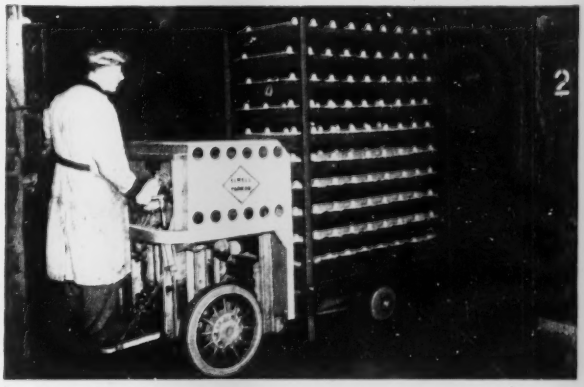


UPKEEP AVERAGES ONLY $3.36 PER TRUCK-MONTH by two Elwell-Parkers during 63 months' combined use. Trucks operate 3 shifts per day, 6 days per week. Loads average 10 tons.



"NOT A MINUTE LOST DUE TO MECHANICAL FAILURE IN ONE FULL YEAR" by E-P fleet at concrete block plant. One truck operated round-the-clock for 6 months, stopping only for battery changes and lubrication.

MAINTENANCE TIME ONLY 1 HOUR PER TRUCK-MONTH by fleet of 16 low lift platform Elwell-Parkers. These trucks are over 10 years old and currently operate 24 hours per day.



32 YEAR OLD TRUCK STILL IN DAILY SERVICE at Canadian foundry. It transports cores directly into ovens heated to 400°. Here is real proof of E-P built-in dependability.

Why Elwell-Parkers Cost Less to Maintain:—

There are 3 basic reasons for the remarkable service records described above—

1. Packaged unit assemblies permit fast, easy maintenance. Accessibility for servicing is a basic feature.

2. E-P trucks commonly give 15 to 20 years of service because they are ruggedly built. Alloy steels, forgings and extra reinforcement of critical parts prevent excessive wear or breakage.

3. Preventative maintenance programs and proper operating techniques are carefully explained by an E-P Service Engineer who helps install each new truck and follows up with periodic calls to answer operating and maintenance questions.

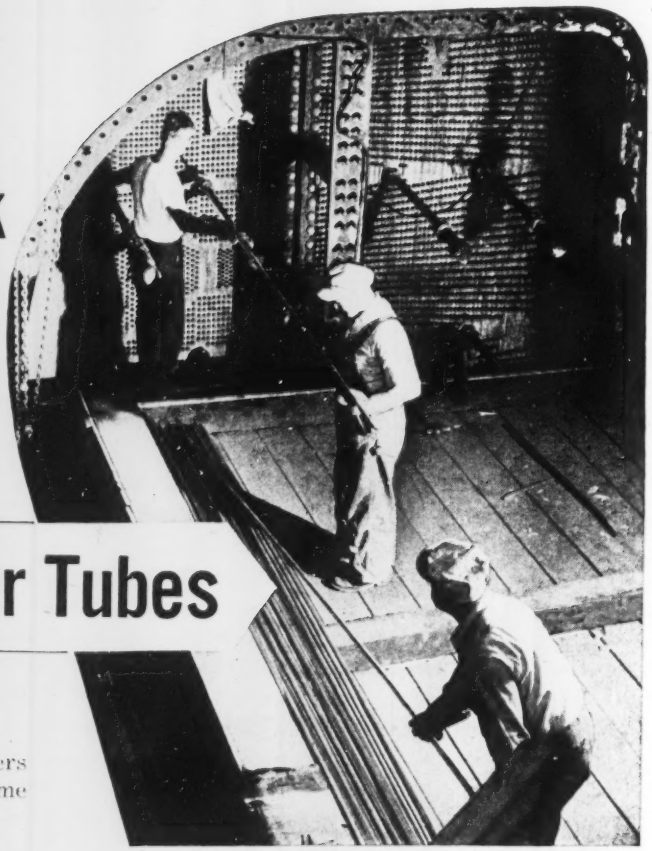
ALL PLUS FEATURES are explained in this illustrated, general catalog. Write The Elwell-Parker Electric Co., 4106 St. Clair Ave., Cleveland 3, Ohio.

ELWELL-PARKER

POWER INDUSTRIAL TRUCKS

Established 1893

One Way to Lick Corrosion and Wear of Heat Exchanger Tubes



Anaconda 70-30 Cupro-Nickel Tubes, produced by AMERICAN BRASS COMPANY, Waterbury, Conn., were used to replace tubing of Admiralty Metal at the Harbor Steam Plant, Dept. of Water and Power, City of Los Angeles, Calif. View shows men retubing part of a 70,000 sq. ft. surface twin-condenser with 5,878 Anaconda cupro-nickel tubes ⅞" O.D. x 26' 3" long, serving a 75,000 KW turbine.

It takes a lot of handling to retube heat exchangers . . . and while the job goes on, equipment downtime plays mischief with production.

Minimize the risk of such shutdowns. Wherever heat-transfer capacity is a factor, especially where wall thickness of tubes allows but little tolerance for effects of corrosion and erosion, specify 70-30 cupro-nickel tubes.

Thin walls of this strong tough alloy resist corrosive and erosive attacks from all sorts of cooling media, including polluted, silt-laden harbor water.

Along with ability to withstand a wide variety of corrosive agents, the 70-30 cupro-nickel tubing provides outstanding resistance to pitting and stress corrosion cracking.

* * *

Aship or ashore, this alloy gives unsurpassed performance in vital parts of equipment exposed to salt water corrosion.

In power generator stations, sugar mills, oil refineries and similar plants . . . cupro-nickel alloys serve in feed water heaters, condensers, evaporators and other heat exchangers, and in oil coolers, stills, water boxes, piping, tanks, and other equipment. Cupro-nickel alloys minimize maintenance and replacement expense, loss of heat transfer capacity and interruptions of operation resulting from corrosion.

* * *

Cupro-nickel is produced in tubing, rod, strip, wire and sheet, and also in cast form. We shall be glad to give you additional information and help you select the one best suited to your requirements. Write us today.

At the present time, nickel is available for the production of cupro-nickel and other alloys containing nickel, for end uses in defense and defense supporting industries. The remainder of the supply is available for some civilian applications and governmental stockpiling.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET NEW YORK 5, N. Y.

More and Better Changes

If one were to judge from recent political events, the Eisenhower administration is suffering from a loss of public confidence. Results of elections in Wisconsin, New Jersey and elsewhere; the running feud between cattle raisers and some farmers and Secretary of Agriculture Ezra Taft Benson; the aloofness of many spokesmen for the unions; and finally the visible signs of disappointment on the part of the public generally all point to a disconcerting lack of faith in or understanding of what the President is trying to do in Washington.

On the surface, it would seem that these evidences of doubt on the part of the public do not jibe with public thought as expressed at the polls in November last year. Then the people definitely wanted a change, a reduction in government expenditures, a trimming of bureaucracy to reasonable size, a lowering of taxes and an end of many federal controls. Now, from recent events, it looks as if many of the people do not want what they asked for only a year ago.

For instance, every effort of the administration to do the things the voters demanded a year ago has met with determined opposition. In Washington one would think from the remarks of cab drivers, hotel and restaurant proprietors and many others that every reduction in the number of federal employees is a destructive act. Out in the nation, whenever the Eisenhower administration announces that it is going to discontinue a regional office in City A, or merge it with one in City B, in the interest of economy, a terrific howl goes up from many groups in City A. Strangely enough some of the loudest howls come from persons who were most insistent for a change in November, 1952.

Probably the most significant conclusion that can be drawn from this queer situation is that people who have become used to federal patronage in so many ways for such a long time find it hard to change their ways and to do what they know they should do.

The lesson for the administration is this: Cling to your original objectives. Make changes more promptly and more positively.

E. C. Shaner

EDITOR-IN-CHIEF

TRY LABOR DIPLOMACY: Shortly after the steel strike ended last year Philip Murray and Benjamin Fairless announced that they would make a tour of United States Steel Corp. plants in the hope that such visitations would lead to a better understanding of labor problems. Unfortunately the death of Mr. Murray prevented him from carrying out the plan, but now Mr.

Fairless and David J. McDonald, president of the CIO United Steelworkers, have announced jointly they will inaugurate the visits beginning Nov. 17.

In their announcement they say, "There is no better way to look over mutual problems in hope of developing a better relationship and a better understanding of each other than in just this way." Inasmuch as the plant tours start at a time when the CIO annual convention will be in session in Cleveland, the opportunities they will afford for discussion of mutual problems may be timely. Industry will watch this experiment in employer-union diplomacy with unusual interest.

DISCOUNTS WAR PERIL: Winston Churchill's address to the House of Commons last Tuesday contained two statements of arresting interest. One was that the development of atomic weapons may yet bring an "utterly unforeseeable security to mankind" because "when the advance of destructive weapons enables everyone to kill everybody else, nobody will want to kill anybody at all."

His second point was that in view of evidences that Russia is trying to give more attention to improving the well-being of her masses, "I do not find it unreasonable or dangerous to conclude that internal prosperity, rather than external conquest, is not only the deep desire of the Russian people but also the long interest of their rulers."

Some authorities may contend that the Prime Minister's words may lull people of the western nations into a state of dangerous complacency. Fortunately there are strong arguments against this possibility.

* * *

TOO HORRIBLE TO USE? First, the theory that atomic warfare is so terrible it never will be used in combat is not too farfetched. In World War I, the Germans used poison gas effectively in several areas in early stages of the war. They discontinued its use long before the armistice. Many nations had poison gas available in World War II, but none made any attempt to employ it.

As to A and H-bombs, who should fear their menace most keenly—the U.S.S.R. or the U. S.? We have many prize targets for the bombs, but should a raiding party start for a U. S. target, the U.S.S.R. home area would be open to retaliatory attack from the 360-degree circle of western air bases encircling U.S.S.R. As in the case of poison gas, atomic warfare may be too hazardous for any sensible nation to start it. Churchill's words on this subject are well worth pondering.

* * *

MUST SAVE HIS SKIN: In saying that the Soviet people and their rulers would do better to work for internal prosperity rather than for external conquest, Sir Winston is on sound ground. It is doubtful whether the Kremlin can continue to justify the terrific cost of maintaining East Germany, Czechoslovakia and some other satellites in bondage against the unmistakable desire of the people for freedom and independence.

From every sensible standpoint, the U.S.S.R. now is in the position of an ambitious aggressor who has grabbed onto more territory than he can manage. His best bet is to pull in his horns, consolidate his gains, and mend his internal fences. In fact, he probably cannot retain all he has stolen. He may have to give up some loot to save his skin.

* * *

MORE DO OWN WORK: Today millions of Americans are doing repair jobs around the house which a decade or two ago were usually entrusted to hired tradesmen. One indication of how this "do-it-yourself" idea is gaining favor was afforded recently when a trade show catering to persons who do their own home repairs or who work with a hobby attracted an attendance of 80,000 persons to Navy Pier in Chicago.

Manufacturers and suppliers of equipment, tools and materials exhibiting at this show (p. 70) estimate that annual sales, now running at about $3.5 billion, will increase sharply during the next few years. This optimistic outlook is supported by a number of important factors which are encouraging more persons to do their own work. One is that 51 per cent of homes are owner-occupied, whereas before the war this ratio was 44 per cent. Shortage of building tradesmen and the high wages they demand are factors. Still another is that present-day basement work tools permit the amateur to do a better job.

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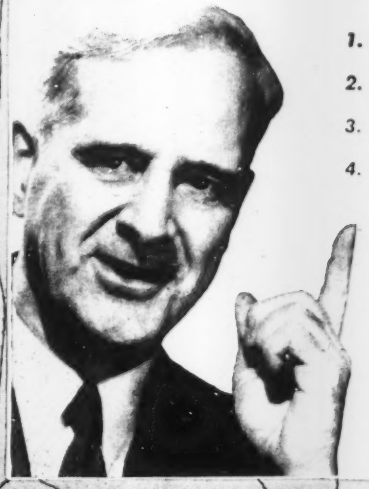

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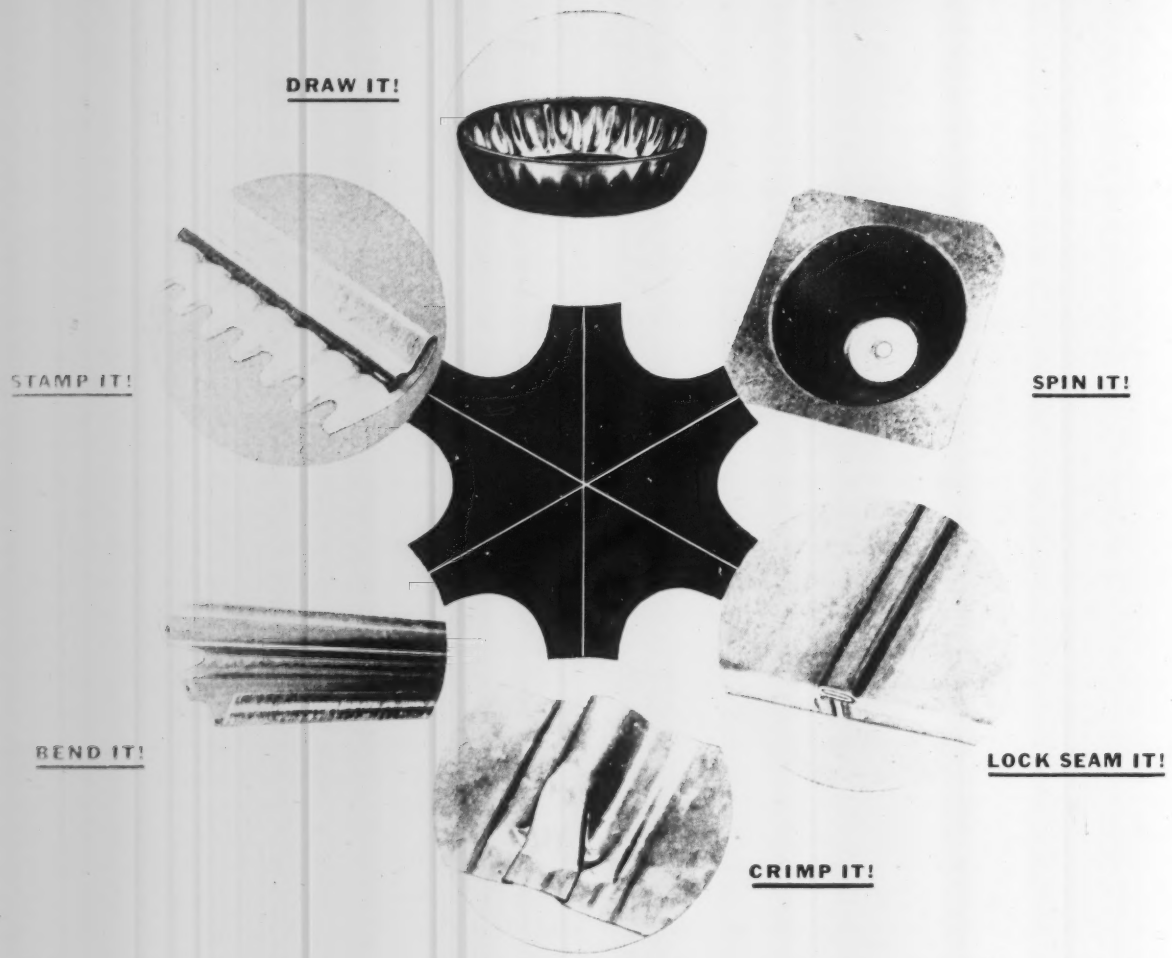

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Because of the terrific demand for this premium quality sheet, you may sometimes find Ti-Co difficult to obtain on short order. But please bear with us. We're doubling our capacity during 1954 to help assure plenty of Ti-Co for everyone. Ti-Co is worth waiting for!

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INLAND TI-CO®... WITH THE ZINC COATING THAT ROLLS WITH THE PUNCH

Labor's 1954 Theme

Employment security will be the battle cry at the CIO's Cleveland convention next week. Listen for more thumping for the guaranteed annual wage

"IF THE guaranteed annual wage is pie in the sky, we're ready to pull it down and change our diet."

So says a Birmingham CIO member. It's typical of the kind of talk that will be heard at the CIO's annual convention in Cleveland next week (Nov. 16-20). The emphasis there will be on economic security rather than pay increases as the theme for 1954.

Repetition—Echoing sentiments heard at the Wage Policy Committee meeting of the CIO's United Steelworkers in New York last month (STEEL, Oct. 26, p. 63), union leaders will all thump the hardest for the guaranteed wage. Last month Steelworker President David J. McDonald said, "it is feasible and practical." Actually, labor is looking for economic security first. The guaranteed wage, insurance and pensions are just gimmicks to get that safety. CIO President Walter Reuther admits that when he says, "The primary goal of a guaranteed annual wage plan should be to stimulate management to provide steady full-time employment the year around."

Other talk will also reflect that heard less than a month ago at the steelworkers' meeting. They sounded off for an expanded, noncontributory insurance program; higher pensions—probably $150 a month—with some provision giving workers a vested interest in accumulated contributions by employers; and a wage increase. Not much emphasis was given to the last point, nor is it likely to be more than mentioned in passing next week. In 1954, the CIO will undoubtedly present its customary high wage demands, but on the average its affiliates will probably settle for five or six cents an hour.

Politics—Big union powwows are designed with a careful thought for publicity, usually directed primarily to members and potential members. But this year, the intramural rivalries between Messrs. Reuther and McDonald led to the steel meeting being cagily staged enough in advance of the general CIO show to steal some of its thunder. As a result, look for the CIO affair to try to make up for some of its stolen publicity by louder and more positive talk, especially about the guaranteed wage.

But don't look for any more specific talk on how the guaranteed wage can be financed than that which the steelworkers advanced in October. The general union attitude on the mechanics of running such a plan is: "That's a management problem."

Proposal—The steelworkers, who admit they don't expect to win a full GAW in 1954, dismiss the mechanics of the matter by saying that a GAW trust fund can be established on the basis of 10-cents-per-hour payments by the company per employee, with the employer's liability limited only to the full amount of the trust fund.

At first glance, that appears like a fairly simple and not too expensive means of handling GAW. But the idea has jokers in it, as demonstrated by the history of John L. Lewis' Miners' Welfare & Retirement Fund which started in a similarly innocuous way with a 5-cent-per-ton royalty on bituminous coal.

Foot in the Door—Mr. Lewis' 5-cent royalty, established under contract in May, 1946, was only a starter. That sum proved wholly inadequate and was raised to 20

Wide World

Otter Takes to the Water

Latest attempt by the Army to turn a truck into a submarine is the Otter, officially the M76 Cargo Carrier. Here the baby of the amphibious family of Seeps, Ducks and Alligators climbs out of a water bath at a demonstration before civilian and ordnance experts at Aberdeen (Md.) Proving Grounds

cents a ton in 1948, to 30 cents in 1950 and to 40 cents in 1952. In the fund's fiscal year that ended last June 30, $7.5 million more was disbursed than was collected. Since the United Mine Workers' leader appears to boost the royalty every two years, chances are good that he'll try to raise the ante to 50 cents a ton in 1954. Even in 1952 when he had just won a royalty hike to 40 cents, he said, "The fund has not yet achieved perfection because we do not have enough money."

Will the steelworkers' proposal for a 10-cent "royalty" be the same foot-in-the-door proposition that Mr. Lewis' has proved to be? That will be the big question when negotiations begin with the steel companies next May in the first concerted effort in a major industry for at least a partial GAW. Mr. McDonald has a big selling job ahead of him, labor observers agree.

He may try his arguments out for size next week when he and U. S. Steel Corp. President Ben Fairless go on tour of the corporation's facilities, starting in northern Ohio with American Steel & Wire and National Tube Division plants.

Sky High Employment

One of every four manufacturing workers in Los Angeles is employed at one of the six local major aircraft plants.

That was revealed in a survey by the western regional office of the Aircraft Industry Association. The area's aircraft employment is 162,000 of a total manufacturing employment of 647,000.

Broad Base—Los Angeles plane plants hold orders worth $3,701,062,574 of a total national plane backlog of $5,864,955,000; enough to keep the plants going at the present rate for more than two years even if no additional military or commercial orders were placed.

Consolidated sales of the major aircraft firms—AiResearch, Douglas, Hughes, Lockheed, North American and Northrop—for the year ending the second quarter of 1953 amounted to over $1,685,000,000, more than the combined total of Los Angeles agriculture, petroleum, citrus and construction sales for the same period. These same companies purchased nearly $500-million worth of materials and services from local shops, merchants and subcontractors in this period.

Strong Stimulant

Trend toward do-it-yourself workshops got a boost when 80,000 attended Chicago show

"DO-IT-YOURSELF" trend received a shot in the arm when a trade show by that name at Navy Pier, Chicago, Oct. 23-Nov. 1, packed visitors in the aisles. Manufacturers and suppliers of tools and materials estimated to be doing a $3.5-billion annual business accordingly see sharply expanding sales volume for their products in the next few years.

First show of this type catering to those who do their own home repairs or work with a hobby was held in New York a year ago. The Chicago exhibition, with around 80,000 people attending, more than doubled the number at the New York premiere.

Unusual Feature—A feature of the show was that in most cases show-goers could test exhibited items themselves, not just look on. That twist whetted the appetite for possession of tools and materials.

Prominent among exhibits were hand tools, power tools and other hard goods for the workshop. In a five-year period, sales of power tools have jumped from $6 million a year to better than $80 million.

Growing Gadgets—Today, something like 100 different kinds of power tools can be purchased. In addition, there are available about 1000 attachments and accessories, including blades, drills, grinders and shapers. Before the war, power tools were limited to some two-dozen types.

Among new materials displayed was a new line of aluminum sheets and shapes developed specially for the home shop. The latter included extrusions from which amateurs can fashion their own combination storm windows and screens.

More Home Owners—Many factors contribute to the upsurge in the "do-it-yourself" procedure. For one thing, more people own their own homes than ever before. Prior to the war only 44 out of 100 homes were owner occupied. The last census showed this proportion has risen to 51 out of 100.

The help shortage as well as high wages of building tradesmen

and maintenance workers has encouraged a growing number of property owners to do their own repairs and improvements. Conversely, higher general wage levels enable these amateurs to acquire the equipment requisite to handle these chores or to follow hobbies.

Bethlehem's Income Up

Bethlehem Steel Corp.'s third quarter sales of $514 million yielded a net income of $34,030,204, compared with $28,534,103 for second quarter, 1953. The larger net income in the third quarter was partially accounted for by a smaller setaside for federal income taxes—$46.8 million in the third quarter, $58.1 million in the second.

Various new records have been set by Bethlehem so far this year. Billings were at an all-time high for the first nine months, although not for the third quarter. Net income was at an all-time high for both the first quarter and the first nine months. Ingot production for the first nine months broke all records for the company.

Bethlehem in the third quarter spent $28,102,000 for expansion and improvements and authorized $34,502,000 more for such expenditures.

ODM Seeks Silicon Sheet Boost

Office of Defense Mobilization has set an expansion goal for boosting "grain oriented" silicon steel sheet production facilities by 65,000 tons annually.

Present capacity is 150,000 tons, ODM says, and fast tax write-off will be granted to producers expanding their facilities. No target date is set.

AS&W Rebuilds Coke Battery

The first push from the third of four coke batteries to be completely rebuilt by American Steel & Wire Division of U. S. Steel Corp. was made last week at its Cleveland coke works. Rebuilding of the fourth battery to complete the program will begin in February. Each of ASW's batteries contains 45 ovens and the total coke capacity is over 2000 tons daily.

Truck To Move a Mountain

Sixteen of these 20-cubic-yard Mack off-highway dump trucks left the States in September and October for Cerro Bolivar, Venezuela, where they will haul iron ore for the Orinoco Mining Co., subsidiary of U. S. Steel Corp. They are equipped with Twin Disc Converters and Parkersburg Hydrotarders to help them cope with 8 per cent downhill grades and have 300-hp Cummins diesel engines

New England Steel Mill: A Green Light

ODM grants conditioned certificate for proposed $26-million electric mill. Government stipulates location must be in nontarget area

NEW ENGLAND's long-sought steel mill has moved another step toward reality. The Office of Defense Mobilization has granted the New England Development Corp. a certificate of necessity for fast tax write-off on the proposed $26-million plant.

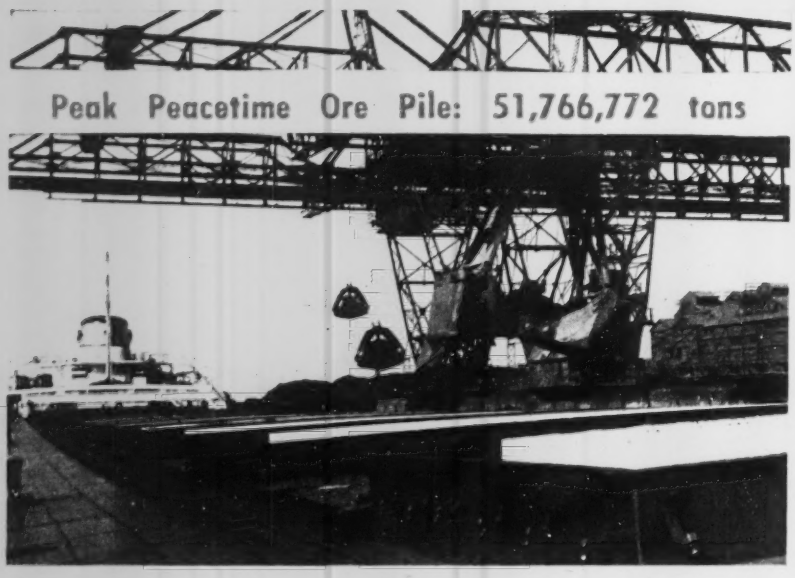
ODM Director Arthur S. Flemming states that the certificate is conditioned upon the selection of a "properly dispersed site" by the NEDC. The certificate allows 65 per cent fast tax amortization on $20.5 million of the total construction cost.

Electric Mill — The proposed plant is described as consisting of two large electric furnaces for steel ingot production and a rolling mill for converting ingots into finished steel products. New England scrap steel will be used, Mr. Flemming pointed out.

Late in September (see STEEL, Oct. 5, p. 50), all of the stock in the old NEDC was purchased for a client by Reid & Priest, New York law firm which is counsel for Ebasco Services Inc., consulting engineering firm. Officials have not revealed the client's identity but told STEEL that the "client is in the steel business and that the proposed mill, New England Steel Co., will be operated as a subsidiary." Original NEDC members had been pushing for a $228-million steel mill but failed to interest any big steelmaker in the project.

For NE Market—Output of the proposed new electric mill will be between 150,000 and 175,000 tons annually of carbon and alloy steel bars, shapes, blooms, billets and tube rounds, officials report. The mill will employ about 500 persons.

No plant site has been determined yet. Biggest location problem to date has been the power consideration; now ODM states that the plant must not be in an existing target area.



Peak Peacetime Ore Pile: 51,766,772 tons

No Shortage of Iron Ore This Winter

Stocks of all grades of iron ore at lower lake ports and blast furnaces are more than adequate. All-rail shipments likely to cease except in rare cases

IRON AND STEELMAKERS are confident there'll be no shortage of iron ore this winter.

Stocks of iron ore at lower lake ports and at the blast furnaces totaled 51,766,772 tons as of Oct. 1, 1953 an all-time high for that time of year and second only to Dec. 1, 1942, stocks of 53,703,000 tons, the all-time, all-date record. Before the Korean war, stocks of 45 million tons were considered adequate for the winter carry-over.

Long Shot—This winter's rosy outlook omits, of course, the long-shot chance of a war before the beginning of next year's shipping season.

All-rail shipments of iron ore during the winter months are likely to dwindle to practically nothing this year after that service had established itself firmly in the recent past. Shipments by all-rail rose from a modest 1,430,699 tons in 1949 to 3,971,615 tons in 1950 and were 7,918,798 tons in 1951 and 5,524,688 tons in 1952. P. E. Feucht, president of Chicago & North Western Railway, says iron ore movement by the CNWR is currently below the exceptionally heavy volume of 1952. And several steel mills have said "absolutely not" to the question of whether they'll use rail shipments this winter.

Comfortable iron ore stocks have removed the pressure from lake shippers for the current season, too. Already 40 to 50 vessels of the Great Lakes ore fleets have been taken out of service for repairs or winter lay up, an unusually high number of removals for early November.

Sure Thing—Even with an abbreviated fleet, however, Great Lakes shippers feel that the all-time record for a season's haul of iron ore down from upper lake ports will be broken this year. As of Nov. 1, the 1953 season's cumulative total was 90,544,018 tons, less than 2 million tons under the record established in 1942, according to the Lake Superior Iron Ore Association

Lake Superior ore is still the most important factor in determining the iron ore outlook for U.S. furnaces as Lake Superior ores as a whole account for 80 to 85 per cent of U.S. usage on a national average. Foreign ore is gaining in usage, though. At Pittsburgh Steel Co., Pittsburgh, for example, 80 per cent of the open-hearth ore is imported.

Good Bet for Future—Taconite usage on a commercial basis is a thing of the future. U.S. Steel Corp., Pittsburgh, has a taconite plant which is rated at 500,000 tons of taconite a year, but output is all for experimental uses. Bethlehem Steel Co. has used 75,000 tons of taconite this year so far, all for experimental purposes.

Erie Mining Co. has begun construction on a mill for concentrating taconite commercially at Aurora, Minn. It will have an annual capacity of 7.5 million tons and will begin operations in 1956. Erie Mining Co. is jointly owned by Bethlehem, Youngstown Sheet & Tube Co., Interlake Iron Corp. and Steel Co. of Canada Ltd., with Bethlehem holding 45 per cent of the stock.

Magnesium Plate Mill Opens

Operation of the first high speed, high production rolling mill for magnesium got under way last week at the Madison, Ill., Division of the Dow Chemical Co.

The mill, an 84-inch reversing breakdown coil mill, produces hot-rolled plate 6 feet wide up to 60 feet long from 2000-pound ingots. Another mill for rolling thin gage magnesium sheet is being installed for operation early in 1954.

Full operation of the Madison Division early in 1954 is expected to supply current military and commercial demands for sheet and plate, with extra capacity to develop new markets.

Cramet Contract Awarded

Turner Construction Co., New York, was awarded a construction contract to build Cramet Inc.'s new titanium plant near Chattanooga, Tenn. Over-all project management and engineering of the new $25-million facilities are being handled by the Vitro Corp. of America, New York.

Partial production of titanium sponge is expected at the plant in 1954, and full production of 6000 tons annually is scheduled for the following year. Cramet is a subsidiary of Crane Co., Chicago (See STEEL, Aug. 10, p. 58).

Fuel for Thought

Dr. J. H. Scharen predicts magnesium will become a diesel and aircraft engine fuel

POWDERED MAGNESIUM, with its tremendous potential energy, would be an ideal fuel for diesel engines and could be adapted to automotive and aircraft applications with proper design changes.

These are predictions of Dr. Joseph H. Scharen, technical director, Reade Mfg. Co. Inc., Jersey City, N. J., made to editors at the ninth annual meeting of the Magnesium Association in New York last week. (For convention details, see p. 180).

No Longer Dreams—How close these predictions are to operating realities is conjectural. Dr. Scharen insists, however, that they are no longer laboratory playthings but a definite commercial possibility.

Technicians at Reade Mfg. Co., experimenting with magnesium's possibilities as a fuel for 3½ years, have built a successful steam engine that operates on magnesium powdered to about 6 micron size.

Bits and Pieces — While Dr. Scharen was reluctant to discuss specific details, this much has been learned of the development and its potentialities:

1. One pound of magnesium gives the same power as 10 gallons (60 pounds) of aviation gasoline, says Dr. Scharen. Present price of the powder is 56 cents per pound.

2. Magnesium should not be considered as a substitute for gasoline. It's a different fuel entirely, requiring alterations to existing engines that would be impractical. First engine built by Reade is closer to a diesel than a gas engine.

3. An auto engine utilizing magnesium would not necessarily be smaller than present ones, but would have about one-third fewer parts. No special metals are required as in jet planes.

4. Oxidation and deterioration of the powder in storage are said to pose no special problems. Reade has stored it successfully for three years.

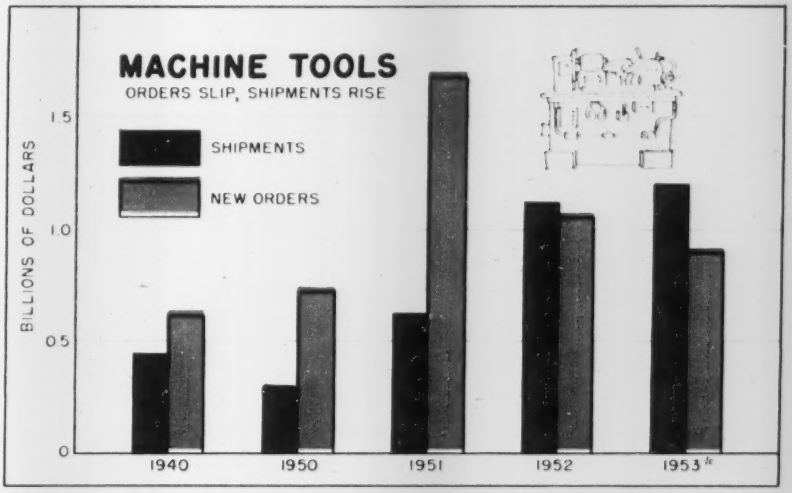
Though its major products are chemicals, Reade is also a large producer of nonferrous metal powders, producing 100,000 pounds of magnesium per month at Lakehurst for such applications as chemicals, powder metallurgy, fireworks and defense needs.

Zirconium for Industry

Firth Sterling Inc., Pittsburgh, is installing melting and rolling facilities to make zirconium and its alloys available for industrial use. The action is being taken without government support, and production will not be committed under any government contract.

Zirconium sponge will be converted in vacuum melting furnaces with a 180-ton annual capacity at the company's Trafford, Pa., plant, and the major portion of the conversion from ingot to rolled product will be done at Firth Sterling's tool steel plant at McKeesport, Pa.

The metal will be available in the form of billets, bars, rods, strip, sheets, wire and tubing.



Source: National Machine Tool Builders' Association. *Estimated by STEEL

Tool Builders Welcome Competitive Times

MACHINE TOOL production in 1953 will be about the same as for last year, says the National Machine Tool Builders' Association. And signs of considerable prosperity for the industry persist.

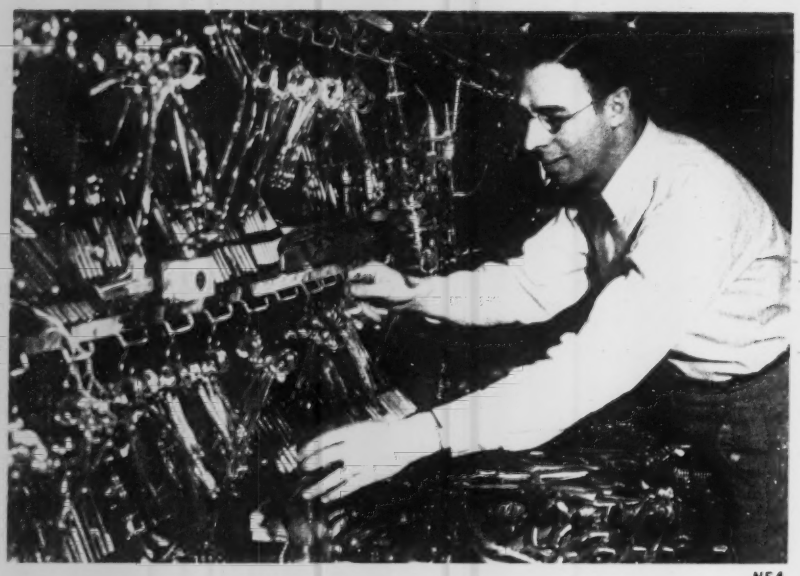
Actually, shipments may be slightly larger this year than last due to completion in 1953 of defense production machines which were started in 1952. Shipments this year are estimated at $1.2-billion compared with $1,125,900,000 in 1952 (see the chart).

Lowest Since Korea—At the same time backlog for the machine tool industry stood at seven months' production at the end of September, 1953. That's the lowest backlog since before the Korean war. Customers can now get normal deliveries on most types of machine tools. At the height of the Korean emergency, the backlog reached 23 months.

That might be expected to give machine tool builders a somewhat somber outlook for next year, but they're not at all worried. Tool builders see the era of competition ahead in consumer goods as presaging the need for more and newer tooling; a stimulant to bolster tool sales.

Still Good—One builder predicts a 10 per cent drop in his company's shipments next year. If that's characteristic of the industry as a whole, the shipments would still exceed $1 billion.

The indicator to watch for the tipoff on future tool shipments is new orders. These have firmed up and have been fairly well sustained following the slowdowns in defense production. Thus, this bellwether industry still regards itself as in healthy condition and welcomes the approach of more competitive conditions.



NEA

Imports create a few pains, but over-all . . .

Medical Equipment Sales Health Thrives

Low European labor costs cut deep into American surgical instrument makers' markets. Other phases of medical appliance industry report top sales year

FOREIGN COMPETITION

"That's a misnomer. The term should be foreign advantage!" That's the reply of a small midwestern surgical knife and scissors manufacturer to the question "how's business and what's the impact of foreign competition?"

Actually, most makers of medical and dental instruments and appliances contacted by STEEL report that business is good. Sales in the industry are up slightly from 1952 and should top the $500-million mark this year. Prospects for 1954 are also bright.

Who's Next?—But the import pinch, particulary in the surgical instruments field, is being felt more and more, and the manufacturers under the pressure are warning, "Watch out, you may be next." Sklar Mfg. Co., Long Island City, N. Y., large surgical instrument maker, has moved into combat. "Competition has forced us to reopen our German factory to defend ourselves. We'll be shipping instruments here in January."

Responsible for the impact, according to the manufacturers, is the low European labor cost. This example was cited by a U. S. manufacturer: "I can show you two apparatus for taking blood pressure which you can not tell apart. One is American made and the other is an exact copy produced in Europe. The only difference between the two is the price the import item costs less."

Brighter Side—Elsewhere in the industry, the picture is not so cloudy. Dental instrument and appliance makers report excellent sales about $18 million, according to the American Dental Trade Association. This industry provides a sizable market for steel sheets, tubing, castings and forgings as well as brass and aluminum products. Companies like Weber Dental Mfg. Co., Canton, O., and Ritter Co. Inc., Rochester, N. Y., report that the average dentist spends about $5000 for capital equipment. Their sales efforts next year will be not only to equip new dental graduates but to get the practicing dentists to replace obsolete equipment.

Another major item in the medical and dental supply industry is the x-ray machine. Units range in price from $1000 to $150,000, and manufacturers report that 1953 sales are equal to or better than 1952. The x-ray has taken tremendous strides since World War II because more applications have been developed in medicine and in industry. The X-ray Department of General Electric Co., Milwaukee, says its latest development is a unit for cold sterilization in the food industry.

An Observation—One maker also reported that foreign competition was beginning to show in the x-ray field. "It's not too great," he pointed out, "but it is significant when American manufacturers begin to buy foreign lines to sell along with their own."

Offsetting some of the optimism, too, in the industry is the decrease in government buying for defense needs. An East Coast maker of sterilizers stated that his business was down 20 per cent because of the loss of government orders.

Healthy Prospects—But on the credit side of the picture, the outlook for next year is still bright. Much business has been fostered by federal aid programs for new hospitals and additions. Then, too, the nation is becoming more health conscious, which together with new medical developments tends to increase the market. Add to those the annual population increase of more than 2 million and the obsolescence factor of many current facilities and the balance sheet for the medical and dental instrument and appliance industry is a healthy one.

Army O.K.'s Chrysler Tank Bid

The Army has formally authorized production of a new tank retriever by Chrysler Corp. The contract for the new vehicle amounts to about $48 million, and a target date for the start of production at the company's Detroit tank plant has been set for mid-1954.

R. T. Keller, Chrysler president, states that 3400 are now employed at the tank plant, about 1000 of whom are completing Chrysler's medium tank contract. Approximately 2400 persons will be employed during the tooling-up operations for the new retriever tank.

Opportunities in Atoms

Westinghouse project may open new possibilities for private industry

CONSTRUCTION by Westinghouse Electric Corp. of the proposed government 60,000 kilowatt atomic power plant may serve as a springboard to get more private industry in atomic energy development.

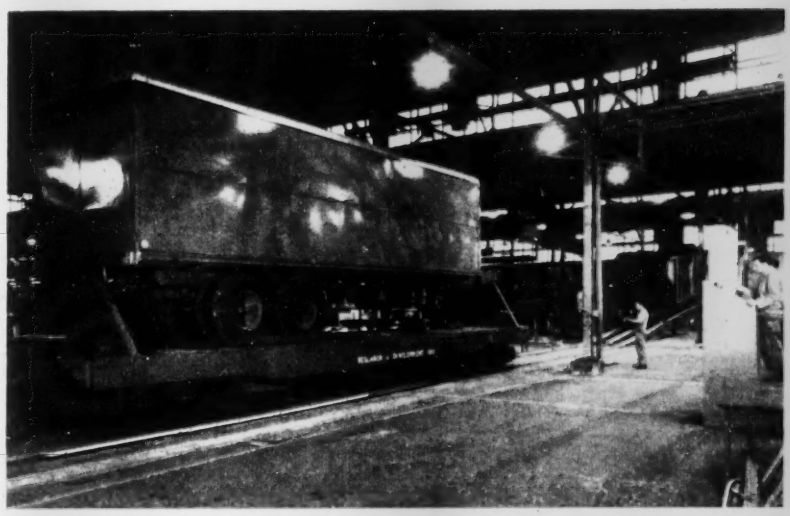
The problem of how to encourage private development of atomic power was one of the chief topics at the National Industrial Conference Board's second annual conference on atomic energy in industry.

Answers Will Come—Production of electricity apparently offers the most opportunities for private industry in atomic energy today, conference officials pointed out. George M. Gadsby, president, Utah Power & Light Co., stated that the costs of the first reactor will be higher than modern electrical plants, but "we will really never know the answer to costs until we build and operate several large-scale reactors."

One of the possible specialized applications for private enterprise not interested in large central power stations is the smaller mobile atomic power station. Rep. W. Sterling Cole (Rep., N. Y.), chairman, Joint Atomic Energy Committee, emphasized the potential here for units to supply power in remote areas or possible disaster-struck areas. Mr. Cole related that he has already recommended to the Defense department and AEC that these applications be given close study.

Law Change Too—Present law also restricts to a great extent private industry's participation in atomic development, and Mr. Cole says he intends to introduce legislation to Congress to foster more private atomic power development.

Another factor in the problem of broadening the atomic development effort is that of security. Officials point out that a re-examination of all information is needed to determine anew what data should be kept secret from Russia. Security is only a delaying action; when it no longer serves that purpose then it must not be allowed to hamper our freedom of action, Mr. Cole emphasized.



No Loose Trailers Wanted

When the railroads start hauling highway trailers in quantity, efficient devices will be needed to make the trailers stay put. In its research and development laboratories at Hammond, Ind., the Pullman-Standard Car Mfg. Co. is experimenting with trailer hold-down devices. Here one is being impact tested

More Atomic Dollars for NE

New England's stake in the nation's atomic energy program is growing, the New England Council reports. Last year the Atomic Energy Commission reported that $42 million was spent directly in New England, and area companies have at present hundreds of millions of dollars worth of work under contract for the AEC outside the New England region. The NEC states that there are 400 research laboratories in New England, representing 16 per cent of the nation's total facilities of that nature.

GM Sales Rocket to New High

General Motors Corp. sales of $7931 million for the first nine months of 1953 were substantially greater than for any full calendar year in the company's history, Harlow H. Curtice, president, announced in GM's third-quarter report.

Sales for the period were 43 per cent above the like 1952 period, and earnings amounted to $453 million. Third-quarter sales amounted to $2490 million and earnings $140 million.

Defense deliveries for the company for the first nine months of the year were 36 per cent above 1952. They represented 18 per cent of all GM sales.

Car and truck production for the United States for the first nine months of 1953 were 2,277,148 passenger cars and 388,344 trucks and coaches.

A Matter of Language

When is it legal, or illegal, to sell below cost?

That's one of the questions that will be considered in the "cost justification" study about to be undertaken by the Federal Trade Commission.

What lawyers, sales managers and other executives have to wrestle with is indicated by this rule for the cedar chest manufacturing industry which bans below-cost selling when engaged in to "injure, suppress or stifle competition or tend to create a monopoly." The rule then says, "This section is not to be construed as prohibiting all sales below cost, but only such selling below the seller's cost as is resorted to and pursued with wrongful intent. . ."

The catch is to prove that there is wrongful intent. The cost-study group hopes to improve the language pertaining to below-cost selling to lessen some of the uncertainty that now exists.

Windows of Washington

Washington is getting more concerned about industry's vulnerability to A-bomb or H-bomb attack. A stiffer, more cohesive government policy is coming up

WATCH for an Office of Defense Mobilization policy statement soon summarizing the steps the U. S. is taking or hopes to take to help us keep on our industrial feet in case of an A-bomb or H-bomb attack.

Purpose of the statement will be to clarify what is being or can be done to protect our industrial capacity and to give more emphasis to the need for protection. ODM isn't expected to pull any great surprises. It will try to make the policy simpler and will pull in all the loose ends. Briefly, the policy is:

To encourage industrial dispersion. Way back in August, 1951, former President Truman set forth a statement that industry ought to disperse. To implement that, ODM has a rule that the dispersion element is a factor in giving out tax write-offs. Actually, the rule has not meant much. Most companies have been allowed to build plants in the 70 heavily industrialized U. S. cities that are considered prime target areas, if they could show that locating outside the area would bring undue hardships in getting labor, in transportation or in incurring additional expenses. ODM will get tougher on this from now on.

To encourage bomb-proof construction in industry. As early as last May ODM broadened the fast amortization program to allow 100 per cent write-off in five years to those companies that were willing to stand the extra expense and trouble to specify for bomb-proof structures. Not until this fall has the first firm, Cincinnati Milling Machine Co., taken advantage of the provision. Its action has helped publicize the provision, and a rash of requests to build similar facilities are now in Washington. ODM hopes they'll keep coming.

To encourage interplant transfers of production. Companies with scattered plants will be encouraged to work out plans whereby defense jobs can be shifted to another facility in case the prime factory is damaged. The Livonia fire was an eye-opener to ODM—and industry. ODM hopes we can learn a lot from it on the best ways to shift production.

To keep up our stockpiling of strategic materials. Washington would even like to increase requirements for some materials. But there are political angles here that make this one especially difficult. Some 80 per cent of the total stockpile dollar objective is in hand or under contract, but inventories of a few critical materials remain short of the goal. As of June 30, stocks of 24 of the 76 stockpile materials were still less than 50 per cent of the objective although additional amounts were on order. At midyear, $4.2 billion worth of stocks were on hand, $1.5 billion under contract and $1.5 billion still to go.

The realization last summer that Russia had an H-bomb is the reason behind Washington's increased emphasis on protection.

To win ODM approval of 100 per cent fast write-off for protective construction, you must have a project that costs $25,000 or more and is located in one of the country's critical target areas.

If you meet those standards and want the full fast amortization, get the approval of your local civil defense director. After he grants it, get your architect or engineer working on construction plans, following in general design concepts outlined in Federal Civil Defense Administration pamphlets. You then can certify that you have followed prescribed construction methods. Also required is the defense director's declaration that the shelter is "adequate and necessary." The application and other documents go to ODM, which passes on copies for FCDA to review. FCDA approval is necessary, but its O.K. doesn't guarantee ODM will give the certificate.

Resource Conference Planned . . .

Has the United States reached a point in its economic growth where it is necessary to give special encouragement to the mining industries to obtain a level of production compatible with the needs of the country? This will be the basic question in the preparation for the discussion of resource problems of nonfuel minerals at the Mid-Century Conference on Resources for the Future in Washington Dec. 2-4.

Bug Beater Business Boosted

Manufacturers seeking new products do well to watch the development work of the Department of Agriculture.

The department's Agricultural Research Administration just has come out with another improved tool, a multipurpose insecticide mist blower engineered at the Connecticut Agricultural Experiment Station at New Haven, Conn. Unlike conventional sprayers designed to do one particular job, the new mist blower can be fitted with different insecticide outlets to make it applicable to virtually any type of insecticide treatment.

Agriculture department's ARA spokesmen say it best can be manufactured by companies presently producing 6 to 12-horsepower, two-cycle engines required in the drive of the blower. One company, Homelite Corp., Port Chester, N. Y., already has been licensed to produce and market the blower.

Flange radius control... another Hydroforming advantage!

Fig. 1
Flange radius before edging.

Fig. 2
Flange radius after edging.

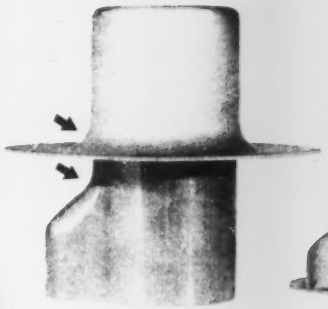


Fig. 3
Partially drawn part after first operation, is shown seated on punch used for second operation. Note large radius on part which matches angular top of projection on punch.

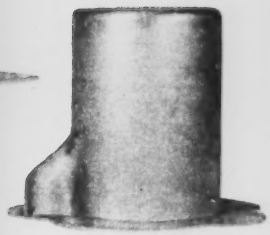


Fig. 4
Special cover is completed in second operation.

The Hydroforming process makes possible sharp corners and small radii—without restriking. With the Hydroform's *edging feature*, a sharp flange radius can be produced *automatically* during the forming cycle.

Edging is accomplished at the end of the forming stroke by reversing the punch a short distance while the blankholding pressure remains on the part. The material formed to the punch moves downward with the punch. The flange of the deep drawn part rests on the draw ring and cannot move. Thus the flange radius is reduced as the punch is reversed. (See Figs. 1 and 2.)

By properly controlling the forming pressure in the latter stages of the draw cycle, it is possible (depending on type and thickness of material) to produce the required flange radius without edging. It is also possible to produce abnormally large radii—advantageous in forming some parts requiring more than one operation without thinout. For example:

To form the special cover (Figs. 3 and 4), the blank was first drawn until the spout-like projection was reached and, by accurate pressure control, the large flange radius was produced which matched the angular top of the projection. Thus, with the material in proper position, the cover was readily completed in the second drawing operation.

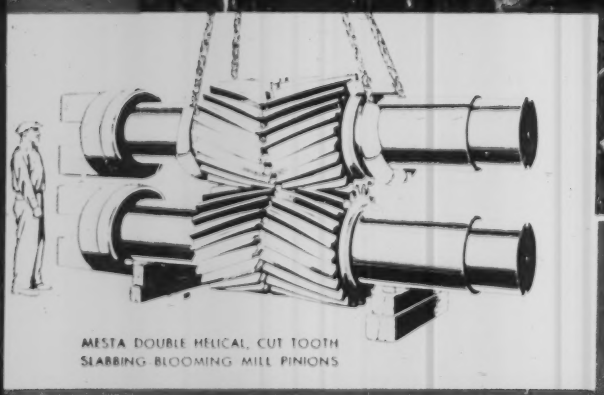
Are you fully informed on *all* the advantages of Hydroforming? Let a Cincinnati Milling field engineer give you full details on this newest method for reducing costs on deep drawn parts production. For a description of the five sizes of Hydroform machines — 12″, 19″, 23″, 26″ and 32″ — write for your copy of Bulletin M-1759-2.

CINCINNATI Hydroform

THE CINCINNATI MILLING MACHINE CO.
CINCINNATI 9, OHIO, U. S. A.

MESTA

MODERN REVERSING SLABBING-BLOOMING MILLS



MESTA DOUBLE HELICAL, CUT TOOTH SLABBING BLOOMING MILL PINIONS

MESTA 46" TWO-HIGH REVERSING SLABBING-BLOOMING MILL

Designers and Builders of Complete Steel Plants

MESTA MACHINE COMPANY

PITTSBURGH, PENNSYLVANIA

New Problems Plague the ECSC

European Coal & Steel Community planners had trouble organizing for expansion of steel output. Now they're faced with a contracting market, growing stocks of raw materials

THE DOWNTURN in steel output among European Coal & Steel Community nations has resulted in a host of problems which the framers of the ECSC hardly expected to face.

Prime purpose of the ECSC was to increase steel output of the member countries by providing a common market for raw materials and steel products. Now it appears that present iron and steelmaking capacity will not be fully used this year and any new facilities which may be built will result only in more surplus capacity.

Important Question—Belatedly, at their last meeting in Luxembourg, the Council of Ministers of the High Authority of ECSC took up the question of future sales prospects. This marks the first time the High Authority has considered whether there will be an increase in demand to justify further expansion of steel capacity of member nations.

Officially, the High Authority still looks for an increase in ECSC production of about 2 million tons in 1953 over the 45.5 million tons in 1952, despite a drop of some 550,000 tons for the first eight months of 1953 under the output of 1952.

High Authority officials point to the tremendous amount of reconstruction to be done in Western Europe. Skeptical Germans point to slipping metalworking product output.

Attendant Evils—But that's not the only problem which decreasing output has forced on the ECSC. Blast furnace and steelmaking scrap has become a drug on the market in West Germany as well as in almost all the other ECSC countries. In Germany, scrap dealers had 473,000 tons on hand Jan. 1, 1953, compared with 660,000 tons on Oct. 1, 1953; stocks at blast furnaces and open hearths grew from 470,000 tons to 792,000 tons over the same period. As a result Germany is resuming scrap exports on a large scale. A contract with Italy calls for export of 660,000 tons of scrap to Italy, of which 106,000 tons were shipped in September and 77,000 tons in October. In addition contracts for scrap shipments to England and Austria have been made. These involve a total of 62,700 tons to be shipped by the end of 1953.

At the same time the ECSC is beginning to worry about the increase of coal stockpiles at pitheads. More than 11 million tons of coal are now above ground and the pile is growing. Under consideration are means of exporting more coal to non-ECSC countries. Stocks of iron ore are piling up in much the same fashion as coal. This development has brought out some agitation for the High Authority to finance the growing stocks of coal and iron ore.

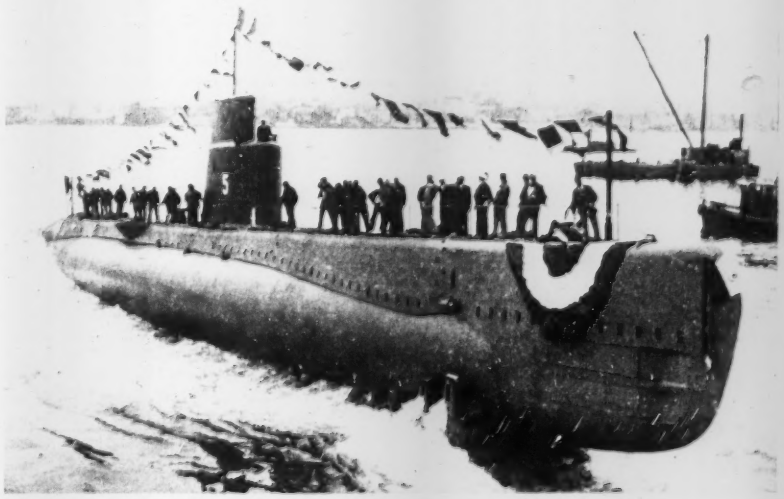
Thus the ECSC is finding that in late 1953 it must operate in reverse. That is, instead of building capacity to supply an expanding steel market, it must face up to a surplus of steel supply in a contracting market and must seek ways to distribute the load of excess raw materials among member nations.

Firms Tap World Markets

Here's how two U. S. companies are seeking to expand sales to world markets.

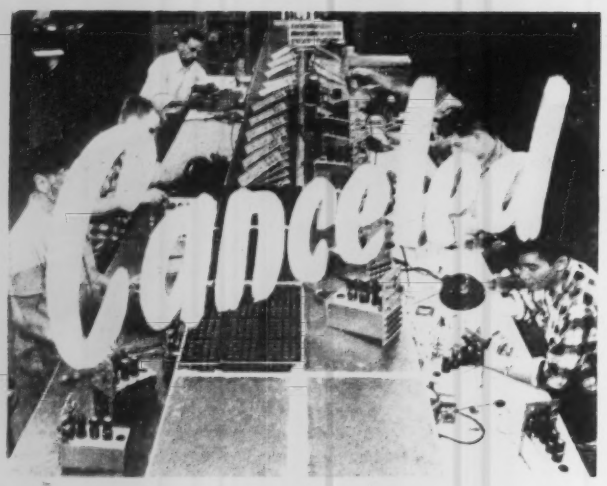
Hewitt-Robins Inc., Stamford, Conn., has an agreement with Coleman-Wallwork Ltd., London, under which Coleman-Wallwork will manufacture to Hewitt-Robins' specifications vibrating equipment for foundries and shakers for railroad cars. The British firm will have distribution rights in the British Isles, North Ireland, South Africa, India, Australia and New Zealand.

Electro-Motive Division, General Motors Corp., has agreed to collaborate with Henschel & Sohn G.m. b.H., Kassel, Germany, in the design, manufacture and marketing of diesel locomotives of standard types yet to be evolved. "This agreement follows the lines of previous agreements signed by General Motors with locomotive builders in Australia, Belgium and Sweden," says N. C. Dezendorf, vice president of GM and general manager of Electro-Motive Division.



For Service Far from U.S.

The Republic of Peru's newest submarine slides into the water at Groton, Conn. Built by the Electric Boat Division of General Dynamics Corp., this submarine, the *Tiburon*, embodies such modern design features as a snorkel breathing system



9 ways to faster CONTRACT

By ROBERT O. JAYNES
Assistant Editor

"TERMINATION for convenience of the government," a standard clause in all government contracts, will take on a new, and sometimes confusing, meaning for many businessmen in the next six to twelve months.

Since the Korean outbreak, the armed services have turned more and more to small businesses. Many of those weren't even established following World War II, when terminations were frequent and comparatively painless. And as long as there was the pressure of a hot war in Korea, cancellations were held to a minimum after 1950. However, with the end of that war, the government began to exercise its right, not only to cut down on basic requirements, but also to change from standard production models to more experimental work.

Scope — Army Ordnance, which has more contracts in operation than any of the other armed services, reports that on June 30, it had 344 termination claims pending. On Sept. 30, the number had risen to 596 worth about $1.25 billion. At present, there are 13,837 prime Ordnance contracts outstanding involving perhaps another 100,000 subcontracts.

The Air Force, which at present is terminating the most contracts, reports that it has one prime with 2152 subs involving over 18,000 purchase orders, which it says is not an unusual case. Effects of even one such prime contract termination would be widespread.

Where It Hurts Most — Where defense contract termination is felt most is in those thousands of subcontracts. Most prime contractors or even large subs know, or will find out quickly, the ins and outs of termination. But the small businessman may have serious difficulties.

For instance, a midwest toolmaker with a 30-man shop had a third-tier subcontract worth about $15,000. The work was just completed when he got a termination notice last April. To date, he has filed his claim twice and asked for a partial payment to free some of the frozen assets which are large for his size shop. He has on his hands a small inventory of finished goods worth a lot of money, and so far he is still waiting for final disposition of his case. His comment, which may be typical of many small businessmen, is, "I'm through with direct government work. I can't afford the risk."

Proper Preparation—If that man had prepared properly for termination, perhaps his problems would be fewer. Nine basic ways are listed on page 81 to make termination easier and faster.

Basically, successful termination hinges on you, the contractor, having at hand the proper accounting and inventory records. This is good business for all contracts but of prime importance when dealing with the government. You must know where you stand at all times with regard to inventory, all costs on completed items and work in progress and any other charges directly accountable to the contract if your claim is to be acceptable to the government.

Assign Responsibility — When you get a government contract, it is good practice to make one person in your organization responsible for termination procedures in case the situation arises. He should at least know what is in Armed Services Procurement Regulation Section VIII, which is the general statement of policies and procedures in contract termination. The document leaves much to be desired, but as long as it is still being used by all services as a basic guide, your man should know it.

Upon termination notice, your man should immediately request a conference with your prime or the contracting officer for the service involved. At this time, he should discuss such matters as procedures, timetables, degree of termination and forms. Each of the subs should pass on to sub-subs this information.

Time-saver — The number of forms to be filled out is sometimes staggering. Therefore, to save time and expense, the armed services will accept the claims on Ditto forms, obtained from Ditto Inc., for 15 cents each. This is chargeable to the cost of termination.

In filing these forms, remember that inventory represents about 80 per cent of termination. Therefore, pay special attention to description of all materials appearing in the claim. Government officials report

TERMINATION

that the great majority of all rejected claims are traceable to incomplete terminology in inventory reports. These forms there are four of them state explicitly what they want. Such things as exact size, condition or AISI number of a piece of steel may be the difference between scrap material and a useful item. Only if the contracting officer knows this can he facilitate the settlement of your claim and dispose of materials.

Snail's Pace—Contract termination is a long process at best. From date of cancellation to final settlement can easily be over a year. Even with ideal conditions, it most likely will take six months. To help cut that time, you should submit your inventories as soon as possible, even before you file a final claim. This will start the ball rolling and save valuable time. Once the acceptable inventory forms are in the hands of the contracting officer, the "plant clearance" period begins. This means that the government has 60 days to screen your reports to determine final disposition of materials. If after that period you have not been told what to do with such material, you may request the government to take it off your hands or enter into a storage agreement with you.

If you need financial help while this takes place, you may file an interim claim for partial payment. If it is a reasonable request based on accurate records, the payment may be made. One Cleveland subcontractor filed an interim claim for $103,000, asking partial payment of $50,000. In a little over a month he had the money, thus relieving his hardship.

Nine-tenths—An important thing to remember is that you must have the materials shown in your inventory to collect your claim. Therefore, do not dispose of anything without written authorization of the contracting officer. Some larger companies which have significant amounts of inventory find it advisable to rent warehouse space to store the material until it can be disposed of properly, but this does not relieve them of the responsibility of possession.

The above suggestions are what you can do to help yourself. But you can do little to correct the inherent weaknesses in the present termination setup. Most serious of those is the inadequacy and obsolescence of ASPR VIII. It has no force of law behind it and is so weighted down with implementing regulations of the various armed services that it is confusing.

Four More—E. K. Gubin, Washington administrative lawyer, claims there are four other basic weaknesses. First, it is too difficult to clear the plant of terminated work because of too many reviewing authorities. Second, he feels not enough leeway is given prime contractors to settle sub claims. At present they have limited authority to settle claims under $1000.

Mr. Gubin also believes that final settlements are not final enough, inasmuch as they can be reversed upon recommendation of the General Accounting Office. Finally, he says that partial payments are too hard to get because contracting officers are not protected by law against personal financial liability.

Regardless of the difficulties, contract termination can be made a little more pleasant by following the above suggestions. And for those who want them, new government contracts are being given out nearly as fast as they are being terminated. The final ray of hope is that the government, recognizing the weaknesses of the setup, is going to rewrite ASPR VIII to make termination simpler and faster.

Contract Termination

- ☑ Keep up-to-date and accurate accounting and inventory records.
- ☑ Assign termination responsibility to one person when receiving a government contract and see that he is familiar with Armed Services Procurement Regulation Section VIII.
- ☑ Contact your prime contractor or contracting officer upon notice of termination to discuss procedure, timetables, problems, etc.
- ☑ Use authorized Ditto forms in making out claim forms in order to save time and clerical work.
- ☑ Submit inventories prior to final claim in order to get inspection procedures in motion.
- ☑ Make inventories as detailed and accurate as possible to facilitate final disposition of materials.
- ☑ File interim claim requesting partial payment if you can prove hardship.
- ☑ Request disposal of materials after plant clearance period if it is taking up space needed for other work.
- ☑ Dispose of canceled material only on written authorization from the contracting officer.

for Greater Strength with Lighter Weight

in modern material handling equipment

The increasing use of the Evans DF Loader reflects the progress of railroads toward more efficient material handling methods.

In the DF Loader there is high strength with minimum weight through the use of N-A-X HIGH-TENSILE steel. This low-alloy steel has 50% greater strength than mild carbon steel, with greater resistance to corrosion with either painted or unpainted surfaces.

You can get the same results as Evans. Your product can be made stronger, lighter in weight and longer-lasting, when you specify N-A-X HIGH-TENSILE steel.

THE EVANS DF LOADER is a product of Evans Products Co., Plymouth, Mich. DF means Damage Free, Dunnage Free.

NAILABLE STEEL FLOORING for boxcars, flatcars and gondolas is made of N A X HIGH-TENSILE steel, and is a product of Steel Floor Division, Great Lakes Steel Corporation.

Engineering data on these products available upon request to the manufacturers.

The "Wonder Bar," a section of which is shown at left, is a vital part of the Evans DF Loader. It is a wooden bar reinforced by a Z-bar made of N-A-X HIGH-TENSILE.

The "Wonder Bar," when locked into place, secures all kinds of lading. It is strong enough to resist shifting load stresses in moving boxcars, yet so light that one man can lift it into position. The DF Loader provides real operating economies for both railroads and shippers.

Another modern product for efficient transportation equipment is Nailable Steel Flooring, also made of N-A-X HIGH-TENSILE steel.

GREAT LAKES STEEL CORPORATION

N-A X Alloy Division — Ecorse, Detroit 29, Mich.

NATIONAL STEEL CORPORATION

By FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom

Canadian automakers have developed some tricks to make a profit despite relatively low-volume production. U. S. builders could get ideas from them

TORONTO, ONT.

ON THE SURFACE the Canadian auto industry does not appear remarkable.

Second to paper pulp as Canada's largest manufacturing effort, it employs only about 35,000 persons and produces less than one-tenth the annual U. S. output. Since the Canadian population proportionally is also less than one-tenth that of the U. S., the picture seems merely one of a scaled-down auto industry which in some respects it is.

Antithesis—But the aura of remarkability enters by virtue of the fact that scaling down is antithetical to the nature of the auto industry. Neophyte auto production men believe devoutly that "volume makes money" and that it's Newton's fourth law. Seasoned auto executives are convinced that any output figure under 100,000 should be preceded by a decimal point. Yet for 1952 the combined Chevrolet, Pontiac, Oldsmobile and Buick output in Canada totaled only 136,021 while Ford products reached 84,189 and Chrysler-built 51,814.

Even these low volumes would not be notably striking if the Canadian auto firms functioned purely as assembly plants for U.S.-built components. But by law auto output up to 10,000 units annually must contain 40 per cent Canadian components, from 10,000 to 20,000 units 50 per cent of the car must be Canadian and a figure over 20,000 cars must bear a 60 per cent Made In Canada label. Highest in Canadian content is the Chevrolet which contains about 75 per cent dominion parts.

Catching Up — While there is general agreement that widespread Canadian production of body stampings is not feasible due to the prohibitive press costs, insufficient supplies of steel and the need for frequent die changes to balance production, Canadians are building more of their own parts every year and doing it efficiently. The Canadian car today costs only about 13 per cent more than its U. S. counterpart compared with an approximately 17 per cent greater cost in 1942.

The thing that sours the sugar in the maple leaves is the fact that Canadian automakers are trapped in the pattern of U. S. annual model changes without the production volume to amortize tooling or justify special purpose equipment on a large scale. Recently representatives of Canadian auto firms gathered at the first S.A.E. international production meeting and forum in Toronto to examine their plight and one fact stood out in their deliberations: Old fashioned mechanical ingenuity is still the key to success in the low-volume plant.

Case in Point—One auto plant, for example, determined that some front end parts were costing more than their automation-produced U. S. counterparts. A comparable machine was then sketched up which could make the parts automatically, but it was discovered that the entire year's production could be made in three months. Essentially the unit cost came out larger than the original method of fabrication. The solution: Noting that the front end parts of all their models were basically similar, the machine was built in such a way that by changing dies all parts of that type could be made on the one machine at a considerable saving.

Interchangeability of parts on different models is a technique that the Canadians use even more extensively than their U. S. brothers. Some time ago, for example, the decision was made to adopt the same engine block casting for Chrysler, DeSoto, Dodge and Plymouth six-cylinder engines. Horsepower output is varied by modification of other engine parts with substantial savings.

Brain Sweat—Other examples of ingenuity may be cited. It was learned that copper tubing could be supplied cheaper than the U. S. product but only in coils, so a wire straightener was adapted to do the job. In another instance engineers discovered that a grill bar could be made more cheaply of brass with only one draw than of stainless which required two draws and a restrike. Welding fixtures with standardized components adaptable from one model to another, bullet-type radiator core soldering machines and electrostatic spray painting equipment also have proved their value in the Canadian operation.

But the Canadians are notable in the avoidance of the automation fetish. They recognize automation as a tool which can serve them well in some applications, but they are also well aware that excessive tooling costs for the sake of faster production are a liability

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,453	570,464
May	685,390	542,559
June	713,206	542,479
July	757,595	226,134
August	641,152	322,755
September	605,343	595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
Oct. 3	142,824	143,234
Oct. 10	148,779	138,035
Oct. 17	152,743	138,088
Oct. 24	149,794	144,747
Oct. 31	145,954	155,037
Nov. 7	138,000*	147,664

Source: Ward's Automotive Reports.
*Estimated by STEEL.

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in the long run rather than an asset.

Tool Conscious — With their lower volume, the Canadians are extremely tooling conscious. They are watching developments in plastic dies with intense interest and have experimented with Kirksite and zinc dies made from wooden patterns. Modification of standard machines to do special jobs is standard procedure in their plants and a movement to greater standardization of commonly used items to get volume is evident. Engineers speak also of a growing movement for product development to be keyed with the method and tools of fabrication rather than designing the product and then deciding how to build it.

The Canadians have learned much from their parent companies in the U. S. and have carefully interpreted their knowledge into the production problems of lower volume. The provocative question now arises as competition begins to sharpen in this country as to whether the teachers may not learn some lessons from their Canadian pupils about adjusting to lower output at a profit.

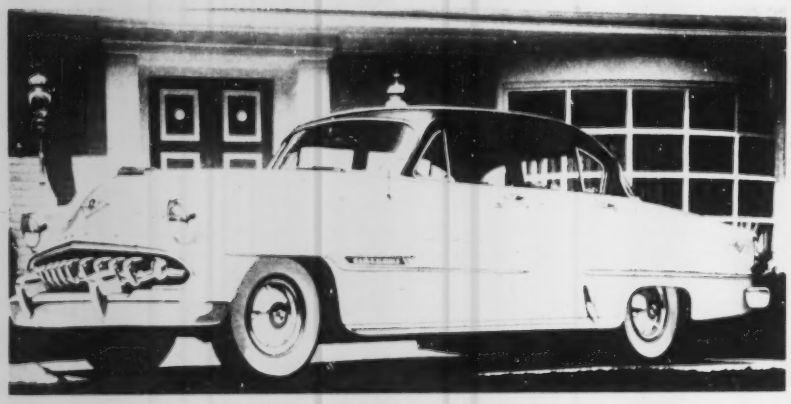
last year. Its new interiors are color-keyed with the new exterior colors and somehow from stem to stern the DeSoto epitomizes the fine art of being vogueish without being vulgar.

Horsepower is increased from 160 to 170 through a compression hike to 7.5:1. New shear-type engine mountings to lessen vibration and PowerFlite transmission are also offered in the power department. Adoption of a new high-roll-center front suspension of the nonparallel control arm type lessens the tendency of the body to lean during turns while a stiffer frame, redesigned front and rear body mountings and a new rear spring mounting contribute to an improved ride.

It seems evident that DeSoto is filling nicely the wholesome Church-on-Sunday buyer spot vacated last year with a roar by Dodge.

Comment on a Rumor

While not denying the possibility of a merger among the independents, George W. Mason, Nash president, denies that a merger is



LATEST IN DESOTO FIREDOMES
. . . no rocket ship, but smooth on the highway

DeSoto for 1954

There is something rosy-cheeked about the DeSoto for 1954. It does not pretend to be a jet plane or a rocket ship. Its hood scoop scoops, its redesigned instrument panel with individual mounting of each instrument is an instrument panel and its trim changes retain or enhance the body integration of the

essential to survival for the smaller automakers.

"It is true that the independent's cost of unit tooling is higher, but that is offset to a large degree by other factors. In our own case, Nash's high degree of integration is one of the offsetting factors. The Big Three perform many operations in widely separated plants, and packaging and shipping costs alone constitute one of the major expenses.

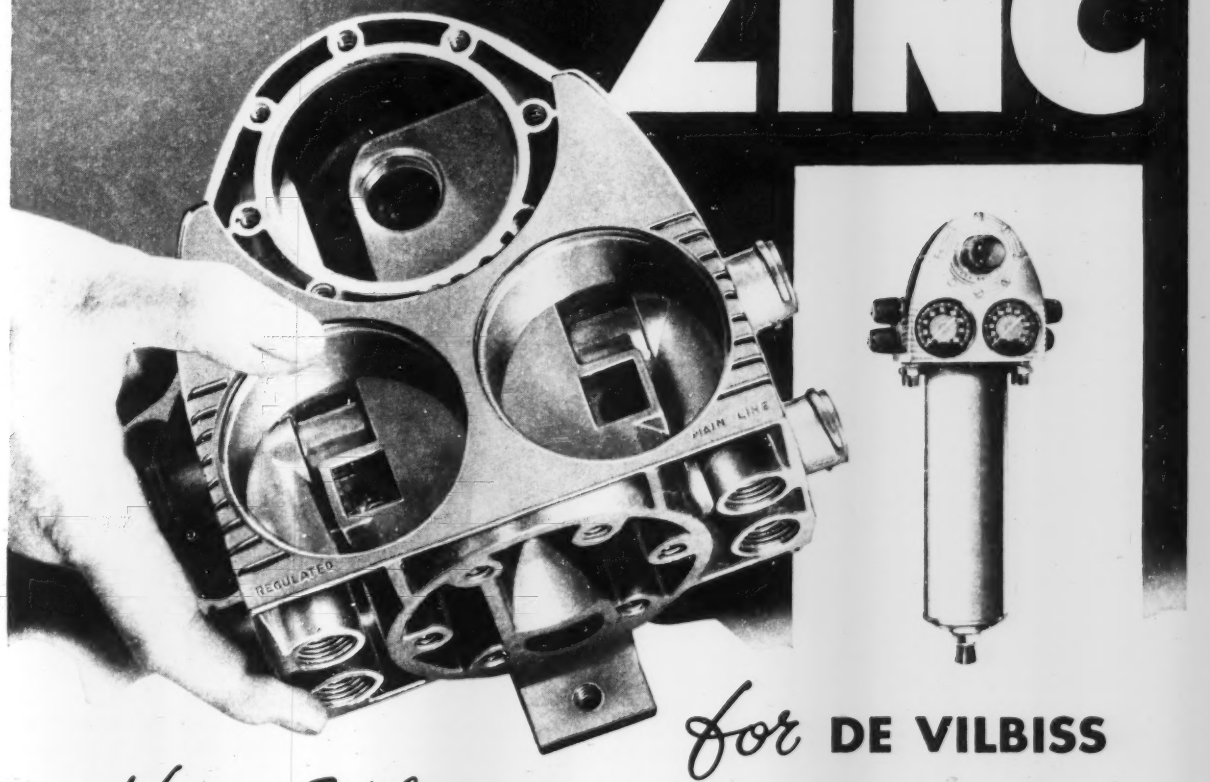
"If there is a merger at any time in the future between Nash and any other automobile company it will be in the best interests of Nash; otherwise it will not be considered," said Mr. Mason.

Exhaust Notes

Don't expect quick action by Packard, which took 20 per cent of the output of Briggs Mfg. Co. recently purchased by Chrysler. The Packard business will be shifted from Briggs-Chrysler when 1955 model runs begin about midyear. New supply source possibilities include adaptation of the Utica, Mich., J-47 engine plant or jobbing to another body builder which may have idle capacity shortly . . . Jaguar recently set a new stock production car record of 172 mph with an XK-120M near Jabbeke, Belgium. It has all the local Jag owners looking daggers at their 120-140 mph clunkers . . . A new water-base synthetic resin may save automakers close to $2 million annually. The resin is thinned with tap water instead of expensive solvents, dries to a waterproof finish.

The U. S. Chamber of Commerce points out that federal excise taxes are levied on automobiles but not on luxury cabin cruisers . . . A Dodge experiment in body styling, otherwise known as a publicity gimmick, is the new 34-inch-high sports car dubbed the Firearrow. Built on a 115-inch wheelbase by Ghia in Turin, Italy, the car contains "certain styling and engineering features which may well be reflected in Dodge production models, but there are no present plans to manufacture the Firearrow," says William C. Newberg, Dodge Division president . . . An exhaust system that renders truck exhaust noises inoffensive to the human ear is announced by GMC Truck & Coach Division. The mufflers are a reverse-flow type, larger than previous units and made more rigid by the use of heavier gages of metal. No decrease in engine power is reported as a result of the new "silent power" system which will be standard equipment beginning this month.

DIE CAST OF ZINC



for DE VILBISS

Here's Why .....

The unusual combination of cored openings, decorative effects and engraved lettering called for in this part were best obtained as a ZINC Die Casting. Furthermore, it is important that the part be highly corrosion-resistant and of sound structure to withstand up to 300 pounds per square inch of air pressure without a bubble of leakage. No other metal or method of fabrication could provide all of these physical characteristics at a cost comparable with ZINC Die Casting.

This casting – the regulator head for the pictured De Vilbiss air transformer, which feeds compressed air to spraying and other equipment with a high degree of uniformity and accuracy – requires an absolute minimum of secondary operations prior to assembly, thanks to the unusual castability of ZINC. And the as-cast surfaces of this casting are plated easily and economically.

The De Vilbiss air transformer is just one of countless products made better with ZINC die castings. Ask us – or any die casting company – for a copy of our booklet "The End Uses of Zinc Die Castings" which has 48 pages of successful ZINC die casting applications.

ZINC IS FREELY AVAILABLE

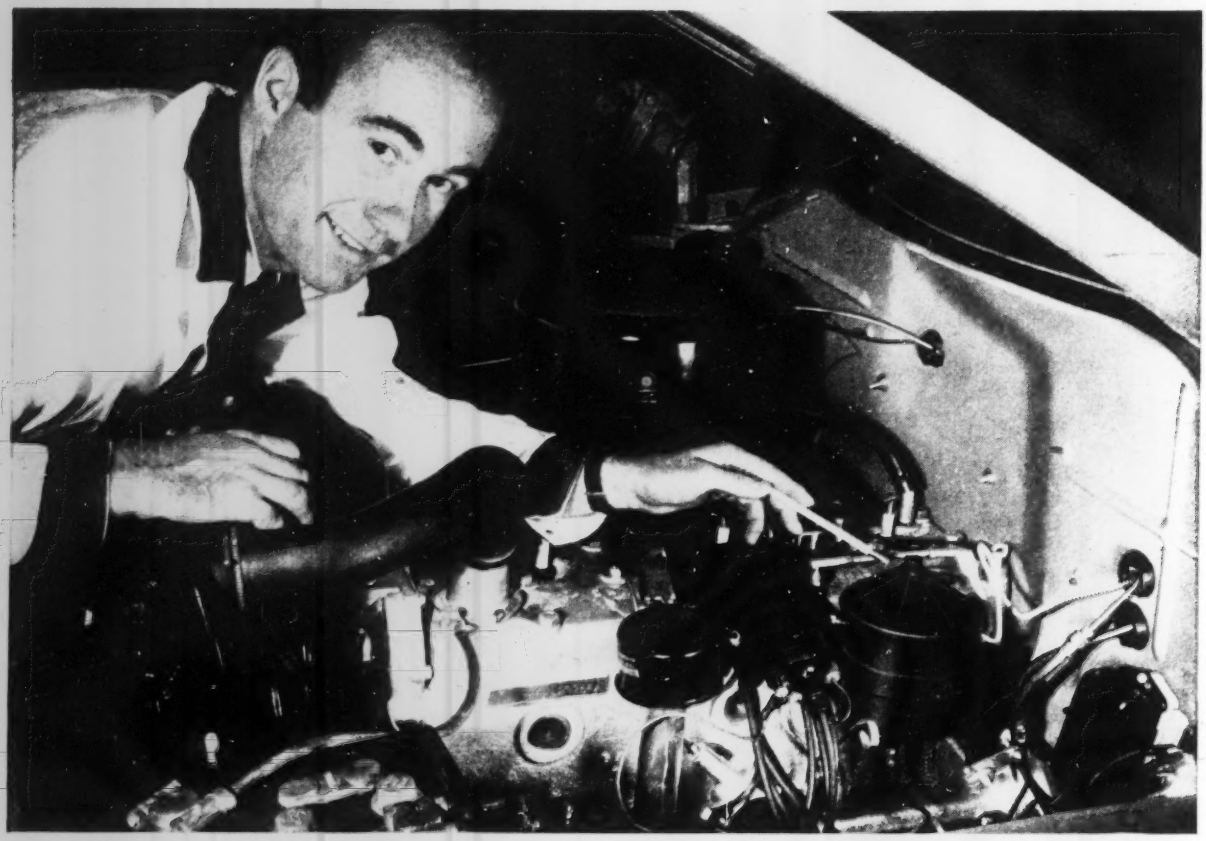
The American Zinc Institute has issued a new folder which gives the facts on why "zinc supplies will continue to be sufficient to meet both near and long range requirements". Ask us for a copy.

The New Jersey Zinc Company
160 Front St., New York 38, N. Y.

ZINC
FOR DIE CASTING ALLOYS

The Research was done, the Alloys were developed, and most Die Castings are based on

HORSE HEAD SPECIAL (99.99 + % Uniform Quality) ZINC



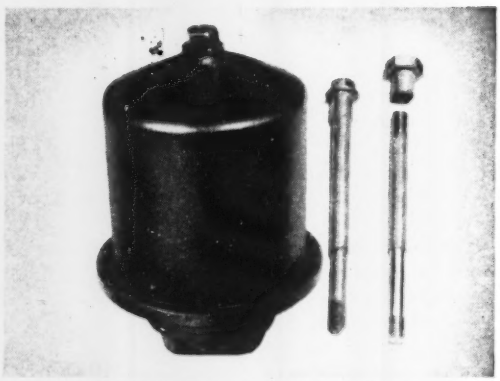
Here's where Purolator screened out rising costs

● Purolator makes oil filters for a prominent auto maker. They're top-notch filters that do a tough job well. Purolator and the car manufacturer are both proud of them.

Not long ago an RB&W "fastener engineer" got loose in the Purolator plant—just when company production executives were looking for a way to lick rising costs. He noticed that the Purolator filter was being assembled with a two-piece fastener made slowly and laboriously on a screw machine.

Our man told the Purolator people about RB&W's batteries of cold-forming machines. Purolator wanted to know more. Now their filter is assembled with a one-piece RB&W fastener that costs far less to make and assemble.

Chances are you can find a stage in your operations where RB&W "fastener engineering" can help you keep costs in line. As a leading manufacturer of all kinds of fasteners, we're always able to recommend and supply the right ones for all your needs. Write RUSSELL, BURDSALL & WARD BOLT AND NUT COMPANY, Port Chester, N. Y.

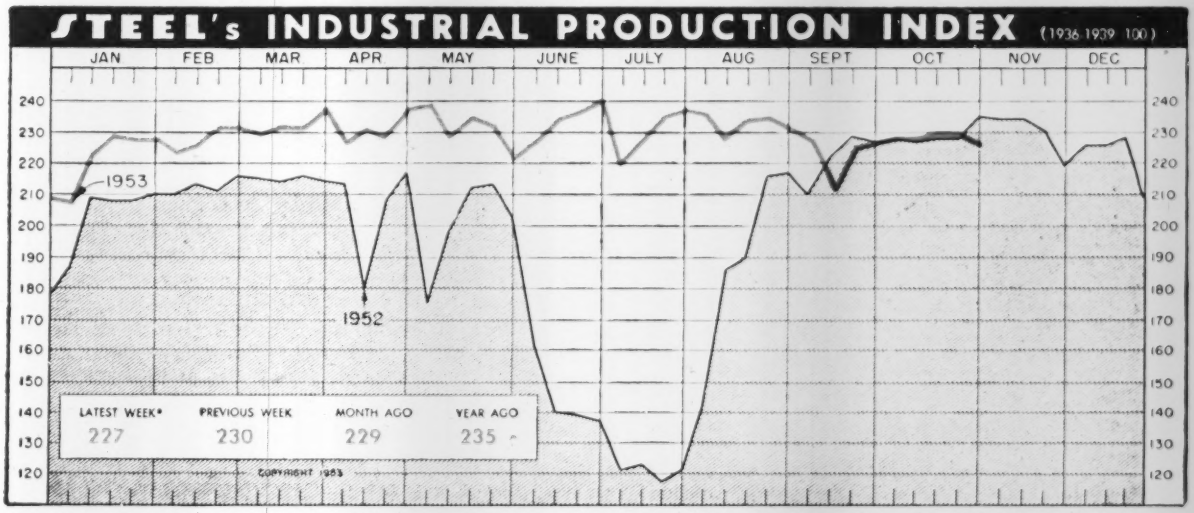


EASIER, FASTER ASSEMBLY undercut high costs when Purolator switched from a two-piece fastener *(right)* to an RB&W-designed cold-formed fastener *(left)* for its famous oil filter.

RB&W

108 YEARS MAKING STRONG THE THINGS THAT MAKE AMERICA STRONG

Plants at: PORT CHESTER, N. Y., CORAOPOLIS, PA., ROCK FALLS, ILL., LOS ANGELES, CALIF. *Additional sales offices at:* PHILADELPHIA, PITTSBURGH, DETROIT, CHICAGO, DALLAS, SAN FRANCISCO. *Sales agents at:* PORTLAND, SEATTLE. *Distributors from coast to coast.*



*Week ended Oct. 31 Based upon and weighted as follows: Steelworks Operations 35%, Electric Power Output 23%, Freight Car Loadings 22%, and Automotive Assemblies (Wards' Reports) 20%

Sales of most durable goods continue to slip at all levels. Measured by industrial production indexes of STEEL and FRB, output is moving downward gradually

INDUSTRIAL PRODUCTION, as measured by STEEL's index, is starting to decline seasonally. The decline is beginning at about the same time as in most recent years, and if it runs true to form it will last till the first of the new year.

During the latest week, the week ended Oct. 31, STEEL's industrial production index registered a preliminary 227 per cent of the 1936-1939 average. Output was 3 percentage points below the preceding week, when production reached its highest level since Labor Day, and 14 points under the year's record outturn, which was established in the last week of June. In the corresponding week last year STEEL's index rose to 235 per cent —but at that time outturn was still recuperating from effects of the steel strike.

Reductions in automobile and steel output and in freight car loadings accounted for the weekly production dip. Loadings of revenue freight will continue sliding off seasonally till the year end. With automobile outturn scheduled to rise in December from the November level, perhaps steel production will be increased at that time —instead of at the first of the new year, which is the customary procedure.

Record Sales—Not Profits . . .

The hefty demand for goods during the second quarter of 1953 resulted in increased production, sales and profits for manufacturing corporations. Profits of $7.1 billion before taxes and $3.0 billion after taxes were higher than in the corresponding quarter of 1952, when activity was low due to the steel strike, but below the corresponding quarter of 1951, the Securities & Exchange Commission says. With record costs of $61.7 billion cutting down the profit margin, it took record sales of $68.7 billion to produce these profits.

Total assets of manufacturing corporations continued to increase and amounted to $168.7 billion. Increases in cash, inventories, net property and plant and equipment were largely responsible for the asset gain. Current assets rose faster than current liabilities.

Sales Slipping . . .

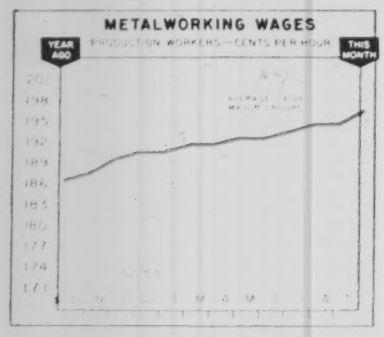
The decline in sales during the third quarter, as compared with the second, should result in reduced profits for most corporations. The continued decline in retail sales during the present quarter will cut profits further. Department store sales have dropped for the fourth consecutive week, compared with the corresponding weeks in 1952, and October sales of Sears Roebuck & Co. were expected to be off about 10 per cent from the like 1952 month.

No Excess Profit . . .

Although sales during the first half of 1954 are expected to be less than in the same period this year, many of the corporations paying excess profits taxes believe their profits will rise due to the lapse of this tax. A company paying the maximum levy of 70 per cent could have its pretax earnings fall by 37.5 per cent and still report the same income. With so sharp a drop in sales and earnings not anticipated and with most corporations operating at a more efficient level—not at capacity—income should rise.

Business Recession? . . .

Looking backward so as to know future prospects better, Dr. Lewis H. Haney writing in the latest "Bulletin" of the National Associ-



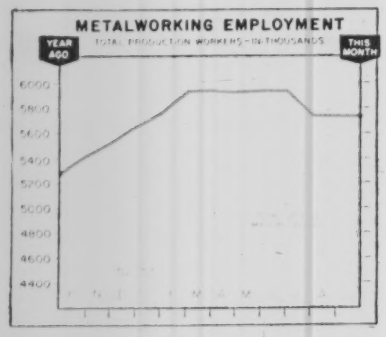
Metalworking Wages

Cents per hour

Production Workers—Five Major Groups

1952	Prim. Mfs.	Fab. Prod.	Machinery	Elec. Mchy.	Trans. Equip.
Sept	199	177	187	168	201
Oct	198	178	189	170	203
Nov	200	179	190	170	204
Dec	201	181	192	170	204
1953					
Jan	203	181	193	172	203
Feb	201	182	194	173	205
Mar	201	183	195	173	204
Apr	201	183	195	174	206
May	202	183	196	174	204
June	205	184	196	175	207
July	205	185	196	176	207
Aug	208	185	196	177	206
Sept	211	186	198	177	207

U. S. Bureau of Labor Statistics



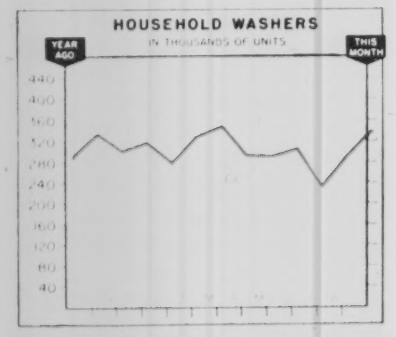
Metalworking Employment

In Thousands

Production Workers—Five Major Groups

1952	Prim. Mfs.	Fab. Prod.	Machinery	Elec. Mchy.	Trans. Equip.
Sept	1,153	821	1,193	743	1,330
Oct	1,162	847	1,212	766	1,380
Nov	1,173	863	1,242	784	1,421
Dec	1,183	881	1,283	800	1,466
1953					
Jan	1,188	891	1,286	804	1,484
Feb	1,192	912	1,323	916	1,513
Mar	1,195	932	1,334	925	1,574
Apr	1,194	932	1,321	926	1,576
May	1,198	932	1,307	919	1,556
June	1,193	956	1,300	911	1,548
July	1,153	937	1,268	895	1,510
Aug	1,132	918	1,241	907	1,499
Sept	1,111	950	1,224	918	1,473

U. S. Bureau of Labor Statistics

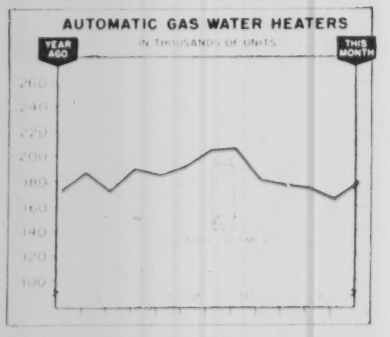


Household Washers

Sales Billed—Units

	1953	1952	1951
Jan	277,300	213,998	321,092
Feb	326,604	266,864	341,325
Mar	346,968	248,431	368,446
Apr	288,474	247,241	292,193
May	286,415	234,668	263,942
June	301,946	274,157	273,119
July	228,268	207,464	139,798
Aug	291,260	254,537	239,081
Sept	310,532	273,702	313,756
Oct		327,814	267,200
Nov		293,679	262,184
Dec		310,661	218,864
Totals		3,101,015	3,301,123

American Home Laundry Mfrs. Assn.



Automatic Gas Water Heaters

Shipments in Units

	1953	1952	1951
Jan	184,000	148,700	225,600
Feb	188,500	145,800	213,400
Mar	203,000	153,300	223,300
Apr	204,100	153,300	199,400
May	179,000	155,300	167,400
June	176,800	149,000	131,500
July	173,800	131,300	102,400
Aug	163,500	161,500	124,400
Sept	177,500	143,200	130,900
Oct		185,300	148,800
Nov		167,100	143,400
Dec		178,600	127,200
Total		1,910,100	1,937,700

Gas Appliance Mfrs. Assn.

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Issue Dates on other FACTS and FIGURES Published by STEEL

Construction	Nov. 2	Gray Iron Castings	Oct. 19	Radio-TV	Oct. 26
Durable Goods	Oct. 12	Indus. Production	Oct. 26	Ranges, Elec.	Nov. 2
Employ., Steel	Oct. 26	Ironers	Sept. 21	Ranges, Gas	Oct. 12
Feb. Strike Steel	Sept. 21	Machine Tools	Oct. 5	Refrigerators	Nov. 2
Foundry Equip.	Sept. 14	Malleable Castings	Oct. 19	Steel Castings	Oct. 19
Freight Cars	Oct. 26	Prices, Consumer	Sept. 28	Steel Forgings	Oct. 19
Furnaces, Indus.	Sept. 14	Prices, Wholesale	Nov. 2	Steel Shipments	Oct. 12
Gears	Sept. 21	Pumps	Aug. 24	Vacuum Cleaners	Oct. 12

ation of Purchasing Agents says that business measurements showed a general recession in September. The indicators his statement is predicated upon are broken down into two classes—demand and supply. The demand indicators largely pertain to factors that create buying activity and to actual purchases; the supply items relate to production. The composite average of both groups declined in September from August. The sharp recent fall of the demand group brought it down approximately to the level of the supply group, for the first time in a long while, and the September ratio of demand to supply was the lowest since 1937. The only measure that kept the demand group from skyrocketing downward was the increased building activity, and signs of a downward trend are already apparent there.

Production Sliding . . .

In line with declining demand, the Federal Reserve Board's index of industrial production did not show the usual autumn rise. The preliminary October index figure was 232 per cent of the 1935-1939 average, unchanged from September. The October pickup in steel production is expected to hold the index at the September figure, which was 4 percentage points below the August average. Reduced outturn of automobiles, farm machinery, some items of industrial equipment and steel accounted for the moderate dip in durable goods output during September.

Auto Output Cut . . .

During the latest week, the week ended Oct. 31, U. S. car-truck outturn totaled 138,993 units, according to *Ward's Automotive Reports*. Production dipped for the second consecutive week largely due to truck model changeovers. Even as output was declining, the automobile industry was getting ready to produce its 5.5-millionth car of the year.

The November production schedule calls for outturn of 386,000 cars, a 28 per cent drop from the 533,000 cars made in October and the lowest production for 14 months. Model changeovers account for part of the reduced out-

BAROMETERS OF BUSINESS

	LATEST PERIOD	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	94.0	95.5	106.5
Electric Power Distributed (million kwhr)	8,350[3]	8,306	7,753
Bitum. Coal Output (daily av.—1000 tons)	1,545	1,546	362
Petroleum Production (daily av.—1000 bbls)	6,215[3]	6,220	6,549
Construction Volume (ENR—millions)	$358.4	$289.3	$276.9
Automobile, Truck Output (Ward's—units)	145,954	149,791	155,037
TRADE			
Freight Car Loadings (unit—1000 cars)	780[3]	804	862
Business Failures (Dun & Bradstreet, no.)	218	185	136
Currency in Circulation (millions)[4]	$30,268	$30,305	$29,510
Dept. Store Sales (changes from year ago)	—7%	—●%	—5%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$17,121	$19,392	$17,561
Federal Gross Debt (billions)	$273.3	$273.1	$261.8
Bond Volume, NYSE (millions)	$19.9	$11.1	$15.5
Stocks Sales, NYSE (thousands of shares)	6,789	6,452	5,980
Loans and investments (billions)[4]	$79.1	$78.9	$76.9
U. S. Gov't Obligations Held (billions)[4]	$31.6	$31.3	$32.4
PRICES			
STEEL's Finished Steel Price Index[5]	189.38	189.38	181.31
STEEL's Nonferrous Metal Price Index[6]	204.3	203.2	212.6
All Commodities[7]	110.0	110.0	111.1
Commodities Other Than Farm & Foods[7]	111.6	111.6	113.0

[1]Dates on request. [2]Preliminary. [3]Weekly capacities, net tons: 1953, 2,254,450; 1952, 2,077,010. [4]Federal Reserve Board. [5]Member banks, Federal Reserve System. [6]1935-1939=100. [7]1926-1929=100. [8]Bureau of Labor Statistics Index, 1947-1949=100.

put, but slipping sales and the enlarged backlog of new cars in the hands of dealers are the major reasons. New car registrations of 455,000 units in September were 45,000 less than in August and were the lowest since February, 1953, R. L. Polk & Co. says. Protests of dealers about reduced profit margins and the tying-up of ever-greater sums of capital have spotlighted the backlog situation to manufacturers.

Next Year's Pie . . .

The increased competition, however, continues to spur the Ford Motor Co. onward. Unlike most producers who have taken weeks to check inventory and readjust production, Ford expects to complete the annual inventory in most of its Rouge plants within a 24-hour period. Ford has increased its share of the automobile market this year and no doubt anticipates a continuation of this trend in 1954, a year in which most industry estimates call for the production of 5.5 million passenger cars and 1 million trucks.

Miles of Orders . . .

Should this estimate materialize, the steel industry will be appreciably bolstered. Meanwhile, U. S. Steel, Bethlehem and Inland are especially pleased by the recent orders for steel rail placed by the Pennsylvania Railroad. The orders, which call for 100,000 net tons of rail to cost $8.8 million, are a third larger than those placed last year.

Some Factory Sales Up . . .

Moving upward in September from August were factory sales of gears, washers, ironers and radio and TV sets. Although gear sales, indexed at 135.6 per cent of the 1947-1949 average by the American Gear Manufacturers Association, were the highest in three months, they were below the corresponding month in 1952. Factory sales of 340,532 washers were the highest since March and were above the same month in 1952, the American Home Laundry Manufacturers Association says. Factory sales of 9113 ironers were slightly above the previous month but considerably below September, 1952. Using Westinghouse radio and TV sales as a guide, industry production of these items in September will probably be the highest in several months and above the same month in 1952. Westinghouse's sales were 246 per cent above September, 1952.

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L&I Chucking Reamers in both Wire Gage and Letter Sizes are now STANDARD in long as well as short lengths. Other L&I exclusives include Dowel Pin Reamers, Right Hand Spiral Flute Reamers in Wire Gage Sizes. Complete line of sets, too. L&I King Size Reamers means King Size Production.
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CHICOPEE, MASS.

No Single Hydraulic Oil Fits All Operating Conditions Economically

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The selection of the right hydraulic oil is determined by many factors, such as average operating temperature; rate of leakage; contamination caused by cutting fluid, water and dirt. *No single oil will meet all combinations of conditions economically.* It's sensible, therefore, to choose a hydraulic oil with care . . . to be sure that it will give top performance at lowest possible cost. Consult your local Sun office or write SUN OIL COMPANY, Philadelphia 3, Pa., Department S-11.

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E. W. SPANNHAKE
. . . LeTourneau-Westinghouse post

T. F. McALEER III
. . . mfg. control for Convair plant

ROBERT C. MYERS
. . . product planning, U. S. Steel

E. W. Spannhake, mechanical engineer and consultant formerly associated with Barnes & Reinecke Inc., was named director of engineering and research for **LeTourneau-Westinghouse Co.,** Peoria, Ill., subsidiary of Westinghouse Air Brake Co.

At **Mercury Mfg. Co.,** Chicago, **O. T. Henkle Jr.** moves from his post of vice president-sales to executive vice president. **P. K. McCullough,** former vice president-manufacturing, is now vice president-sales. **J. D. Appleberry,** who was Mr. McCullough's assistant, has been named plant manager.

Richard N. Rusch was made New England sales manager, Acme Welding Division, **United Tool & Die Co.,** West Hartford, Conn.

David Shipley was appointed general sales manager, **Marvic Inc.,** San Mateo, Calif.

Cuno Engineering Corp., Meriden, Conn., elected **Wilfred G. Schneider** vice president in charge of manufacturing.

D. A. Shardelow was appointed assistant district sales manager of **Republic Steel Corp.'s** Detroit sales office. He has served for the last ten years as district sales manager in Indianapolis where he is succeeded by **John N. Segerson.**

T. F. McAleer III was named chief of manufacturing control for Plant 1, San Diego, Calif., division, **Consolidated Vultee Aircraft Corp.**

Newly elected vice presidents of **Carpenter Steel Co.,** Reading, Pa., are **H. Sturgis Potter, Arlington A. Britton Jr.** and **John Moxon.** Mr. Potter, former general sales manager, is now vice president in charge of sales of the main Reading plant. Mr. Britton, previously general superintendent of the Reading mill, will serve as vice president-production. Mr. Moxon, former secretary-treasurer, becomes vice president, treasurer and secretary.

Gaetan M. Zucco, following military service, resumes his association with **Bethlehem Pacific Coast Steel Corp.'s** fabricated steel construction division as contracting manager, Los Angeles district.

Thomas D. Nast was made president of **All-State Welding Alloys Co. Inc.,** White Plains, N. Y. He has been a director and secretary-treasurer since the company was founded in 1946. He succeeds **Bent Laune,** resigned.

Walter R. Murray joined **United States Air Conditioning Corp.,** Minneapolis, as sales promotion manager.

United States Steel Corp., Pittsburgh, appointed **Robert C. Myers** director of product development, commercial department. In this newly activated position, Mr. Myers is responsible for commercial phases of product planning and development of new products. He continues as director of market development.

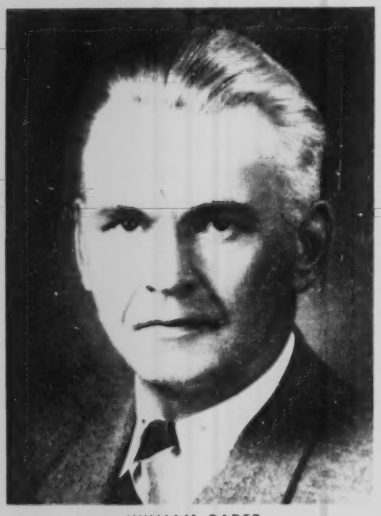
John J. Boylan joined **Newport Steel Corp.,** Newport, Ky., as assistant general manager of sales. He has served for the last three years as chief, Alloy Steel Section, National Production Authority. Prior to that he was with Crucible Steel Co. of America for many years.

Townsend Co., New Brighton, Pa., appointed **W. R. Wyckoff** to the new position of assistant manager, midwest sales division, in Chicago. He assumes his new duties Jan. 1 and will be succeeded as sales representative in the Peoria, Ill., area by **Donald L. Byrne.**

V. A. Guebard Jr. was promoted to general superintendent of **International Harvester Co.'s** gray iron foundry, Milwaukee Works. He succeeds **Elijah Rice,** retired. **Frank Yearling** replaces Mr. Guebard as assistant general superintendent of the foundry.

Robert D. Remington was ap-

EDWIN E. CASPELL
. . gen. supt. of AS&W plants



WILLIAM BADER
heads Wesson research dept.

R. A. McCARROLL
. . master mechanic at Plymouth

pointed division manager, Sintered Metal Parts Division, **Precision Investment Casting Co.**, Pasadena, Calif.

American Steel & Wire Division, U. S. Steel Corp., appointed **Edwin E. Caspell** general superintendent of the New Haven, Conn., and Trenton, N. J., plants. Formerly works superintendent at New Haven, he is replaced by **John J. Grimes Jr.** Mr. Caspell assumes the duties of **Stephen B. Metcalfe**, promoted to assistant district manager of operations of the Worcester, Mass., district.

Frank W. Jenks, vice president, International Harvester Co., was elected a director of **American Steel Foundries**, Chicago. **Joseph B. Lanterman** was elected vice president and continues his duties as controller.

Clyde F. Curtis joined **Lamb Electric Co.**, Cleveland, as assistant to the president.

Wesson Co., Ferndale, Mich., and **Wesson Metal Corp.**, Lexington, Ky., manufacturers of carbide and carbide cutting tools, elected **William Bader** vice president to head up a newly created experimental research and product development division.

Frank M. Hamlin was elected president, **Papec Machine Co.**, Shortsville, N. Y. He succeeds **Ward H. Preston**, resigned. Mr. Hamlin has been vice president since 1940 and general manager since 1947. **Arthur Gaus** and **George Hamlin** were made vice presidents.

R. A. McCarroll was made master mechanic at **Plymouth Motor Corp.'s** main plant in Detroit. He joined Chrysler Corp. in 1948 and was assigned to the gear and axle plant where he became assistant master mechanic. During World War II he held supervisory assignments in the tooling of defense plants for production of aircraft, aircraft engines, electronic equipment and other war materials, and in 1944 headed tool and machine designing and building for rockets and smokeless powder at U. S. Naval Ordnance, Indian Head, Md.

Gilbert E. Jones was promoted by **International Business Machines Corp.**, New York, to the position of executive assistant assigned to general administrative activities.

Walter A. Grant was elected a vice president of **Carrier Corp.**, Syracuse, N. Y. He will head the newly created central engineering staff.

Joseph P. Spang Jr. of Boston was elected a director of **United States Steel Corp.**, New York, succeeding the late **Nathan L. Miller.**

National Alloy Steel Co., Cleveland, appointed **Theodore Wohl** vice president in charge of sales. He was formerly sales manager.

John T. Richards, formerly with Beryllium Corp., was named president and chief engineer of **Penn Precision Products Inc.**, Reading, Pa.

James A. Babcock was named plant manager of **Westinghouse Electric Corp.'s** watt-hour meter plant now under construction at Raleigh, N. C. Other appointments announced by the corporation include **M. H. Hobbs** as manager of the switchgear division, East Pittsburgh, Pa., to succeed **J. B. MacNeill**, who joined the staff of John K. Hodnette, vice president-industrial products. **William A. Patterson** of Chicago was added to the board of directors.

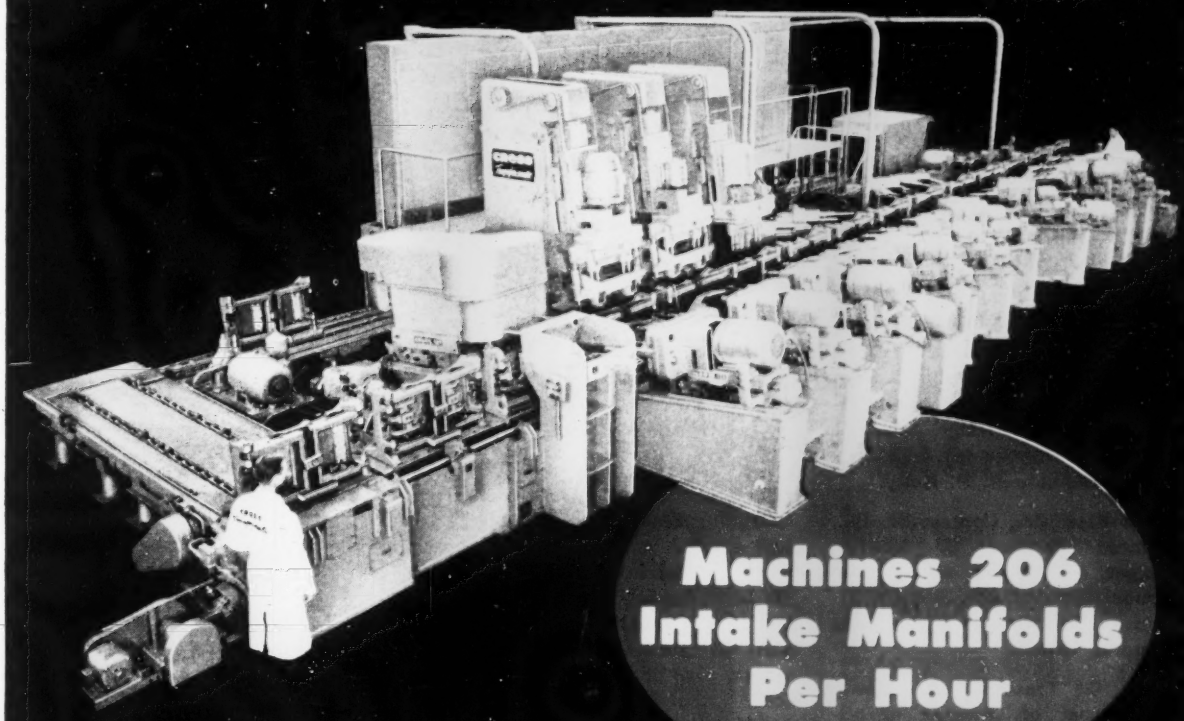
R. W. Sykes was made manager of the new contract sales division of **Inland Steel Products Co.**, Milwaukee.

Whitney Chain Co. appointed **Edwin T. Teal** regional sales manager for the west-south-central and mountain states. He will have headquarters in Dallas.

Kaiser Motors Corp., Willow Run, Mich., and **Willys Motors Inc.** announce the consolidation of electronics research and production facilities. **Clay P. Bedford** was made vice president in charge of the new division, which includes Willys' electronics plants at Toledo, O., and Anderson, Ind., and Kaiser facilities at Nashua, N. H., and Arlington, Va. **John W. McGee** will be general manager of the new expanded division. Mr. Bedford is president and a director of Chase Aircraft Co., which position he still retains.

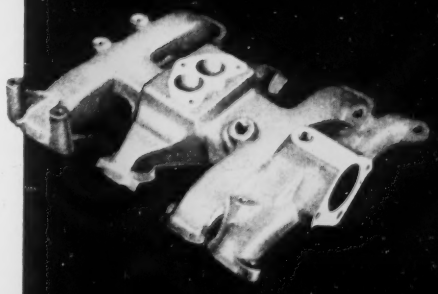
Colorado Fuel & Iron Corp., New

Another Transfer-matic by Cross



Machines 206 Intake Manifolds Per Hour

- ★ Two parts machined at one time in each station.
- ★ 100 operations—two milling, 48 drilling, four boring, 20 chamfering, four spotfacing, and 22 tapping.
- ★ 14 stations—one loading, one unloading, 12 working.
- ★ Palletized work holding fixtures with power wrenches for automatic clamping.
- ★ Integral conveyor for automatic return of palletized fixtures from unloading to loading station.
- ★ Other features — automatic chip removal; hardened and ground ways; automatic lubrication system; J. I. C. standard construction.



Established 1898

THE CROSS CO.

DETROIT 7, MICHIGAN

Special MACHINE TOOLS

York, elected **Charles R. Tyson** a director. Mr. Tyson is executive vice president of John A. Roebling's Sons Corp., a CF&I subsidiary.

George D. Enos Jr. was elected to the new position of executive vice president of **Enos & Sanderson Co. Inc.**, Buffalo. He is succeeded as secretary by **Edwin O. Tilton. Mrs. George D. Enos Jr.** was elected assistant secretary.

William L. Pfeiffer was elected chairman, **United States Hoffman Machinery Corp.**, Syracuse, N. Y. He has been chairman of the executive committee since March. Mr. Pfeiffer is president of W. L. Pfeiffer & Co., Rochester, N. Y.

Thew Shovel Co., Lorain, O., appointed **R. G. Thibaut** service manager and **C. W. Raby** assistant service manager. Mr. Thibaut succeeds the late **R. P. Kelly.**

Lukens Steel Co., Coatesville, Pa., appointed **Thomas B. Newton** manager, marketing service department, market development division. He succeeds the late **George M. Gillen.**

Robert C. Trees fills the newly created post of director of advertising, sales promotion and market research for **Udylite Corp.**, Detroit.

Dr. Charles G. Sage, engaged in rocket research since 1941, was named president of **Arde Associates**, Newark, N. J., engineering firm specializing in design and development of rocket propelled aircraft and heat transfer apparatus.

R. G. Williamson was appointed branch manager at Los Angeles for **Cooper-Bessemer Corp.**

H. B. Hollinshead, former New York salesman, **Federated Steel Corp.**, was promoted to New York district sales manager.

A. T. LAWSON

HERBERT JOHNSON

. . . management posts at Jones & Laughlin Steel Corp.

A. T. Lawson, vice president-general services, was named vice president-production at **Jones & Laughlin Steel Corp.**, Pittsburgh, and elected to the board of directors and the executive committee. He succeeds **E. K. Miller**, now acting as consultant. **Herbert Johnson**, vice president-administration, is now vice president-general services. Other changes include **Walter H. Lewis** appointed works manager, Pittsburgh Works division, **William P. Getty** named assistant vice president-production and **Frank Cambest** assistant to the vice president-production.

F. J. Stokes Machine Co. appointed **Samuel H. Greenwood** district manager of a newly enlarged territory with headquarters in Philadelphia. Formerly manager of extruder sales, Mr. Greenwood will be in charge of sales and services for all Stokes products in eastern Pennsylvania, upstate New York, lower New Jersey, Delaware, and the southeastern United States extending as far as Florida. Assisting Mr. Greenwood in the new district office are **Walter E. Rayher** and **J. D. Robertson.**

A. R. Schneller was made manager of welding sales for the Pacific Coast region of **A. O. Smith Corp.**, Milwaukee.

Sipi Metals Corp., Chicago, appointed **Irwin Goodman** assistant treasurer. He has been with the firm for over 25 years and is in charge of regional scrap purchases.

W. C. Davis will represent **American Hoist & Derrick Co.** in western Pennsylvania, upper New York and eastern Ohio with headquarters in Pittsburgh.

Maynard W. Johnson was made manager of **General Electric Co.'s** distribution transformer plant in Oakland, Calif. He succeeds **Paul R. Hartig**, named manager of employee and plant community relations for GE at Pittsfield, Mass.

Carl T. Miller was elected assistant treasurer, **Mackintosh-Hemphill Co.**, Pittsburgh.

OBITUARIES...

Arthur W. Spengler, 43, for the last two years manager, tin plate purchases, for Atlantic division of **American Can Co.**, New York, died Oct. 29.

Earl Haight, 56, former part owner of **Roger Structural Steel Co.**, Corry, Pa., died Oct. 23. He retired a few years ago due to ill health.

Alfred Yunker, 41, president, and **Ralph O. Ensign**, 63, sales manager, **Milwaukee Precision Tool & Mfg. Co.**, Milwaukee, were killed Oct. 27 in an auto accident.

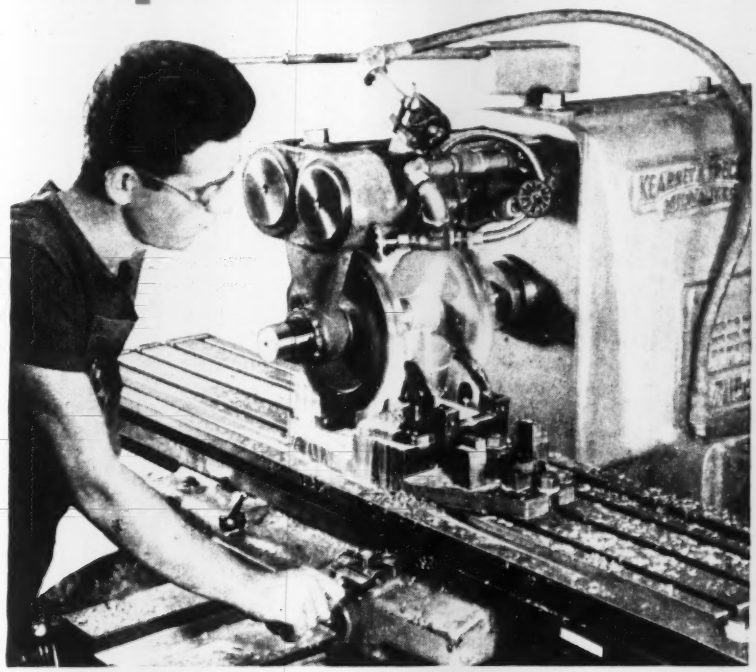
Alfred E. Skinner, 67, commercial sales manager for **U. S. Steel Products Co.**, division of U. S. Steel Corp., died Oct. 22 at his home in Glendale, Calif.

W. Earle Shumway, manager of sales engineering at **Norton Co.**, Worcester, Mass., died Oct. 25.

Ray H. Moore, special consultant with **Claude B. Schneible Co.**, Detroit, died Nov. 2.

Getting right speed selection for tough forgings—

no problem with a CH machine!



This Kearney & Trecker No. 3CH 10 hp Milling Machine mills 100 steel forgings between cutter grinds. Previous average was only 18 pieces!

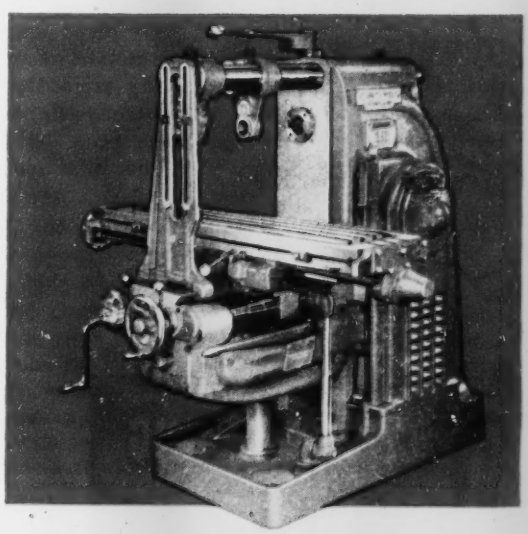
PRODUCTION DATA—Job: Cablair Products Co., Culver City, Calif.—Milling 8630 Steel forging. **Machine:** 10 hp No. 3 Model CH Plain. • **Cutters:** Two HSS 10½" side milling cutters (16 blades each). • **Spindle Speed:** 18 rpm. • **Feed:** ½" per min. • **Depth of Cut:** 1½" max. (¾" per cutter) • **Width of Cut:** 3¼" max.

MILLING tough steel forgings might have presented a difficult production problem if this manufacturer had not owned a versatile No. 3CH miller. Tough material, the necessary speeds and size of cut combined to produce excessive cutter wear. An average of only 18 pieces could be machined before cutters had to be reground. This situation, unremedied, would have seriously restricted output and increased costs.

However, the CH miller's design provides a wide range of 24 spindle speeds (15 to 1500 rpm). By utilizing this feature, and selecting an appropriate coolant, the manufacturer *increased cutter life by over 500%!* Today, uninterrupted runs of 100 pieces are average.

This case is only one of hundreds where CH design features provide the versatility to easily meet common as well as unusual machining problems.

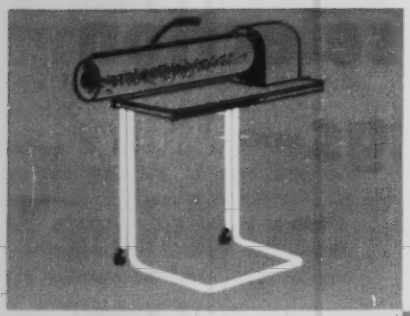
For details on Kearney & Trecker CH machines, contact your representative or write for illustrated brochure.



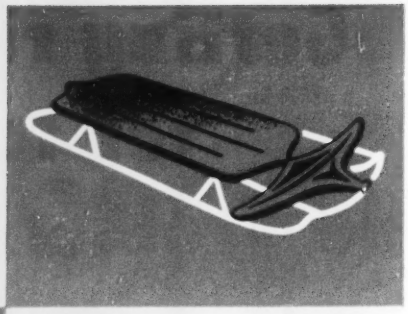
KEARNEY & TRECKER MILWAUKEE MACHINE TOOLS

KEARNEY & TRECKER CORPORATION

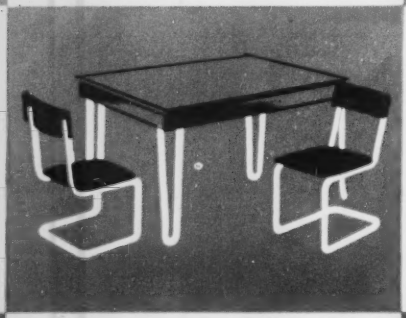
6784 W. National Avenue • Milwaukee 14, Wisconsin



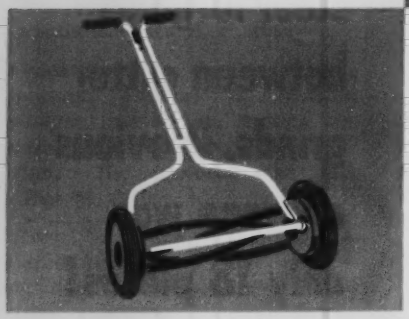
OSTUCO TUBING is versatile!



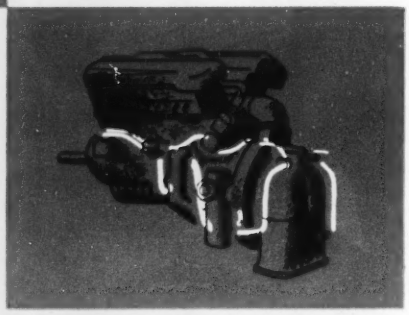
OSTUCO TUBING is versatile!

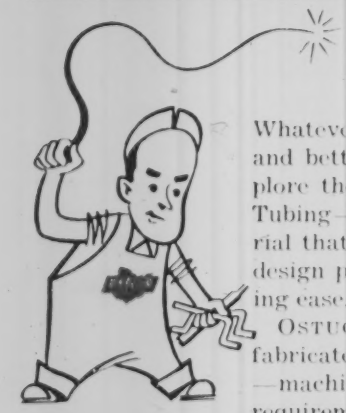


OSTUCO TUBING is versatile!



OSTUCO TUBING is versatile!





whips new ideas into shape

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OSTUCO TUBING can be forged or fabricated beyond recognition as a tube—machined and finished to your exact requirements—quickly joined in assemblies by a large variety of mechanical or welding methods.

Modernized and greatly expanded facilities for *manufacturing*, *shaping*, and *fabricating* tubing, all at one plant—plus our own steel source as a member of the Copperweld family—enable OSTUCO to speed deliveries, assure uniform high quality, and cut your final costs. Write for informative booklet "Fabricating and Forging Steel Tubing."

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OSTUCO TUBING
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End closing • Spinning • Drilling • Slotting
Notching • Flattening • Shaping • Trimming
Threading • Angle Cutting • And Many Others

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Plant Safety No Accident

Solar Aircraft cuts lost-time accidents sharply by developing comprehensive program

PLANT SAFETY has a personal interest to Fred E. Van Horn, safety and security supervisor of Solar Aircraft Co.'s Des Moines, Iowa, plant. In 1945 he lost his left hand four inches above the wrist while working on a punch press.

While recovering in a hospital, Mr. Van Horn decided to work to

"MAN-FROM-MARS" OUTFIT
. . . protects Solar sandblaster

prevent such an accident from recurring. Since his subsequent appointment as safety supervisor, his department has reduced the plant's accident frequency rate from 5.4 lost-time accidents per million manhours in 1947 to less than two such accidents per million manhours at present.

Indoctrination Program—In developing his safety program, one of Mr. Van Horn's first moves was to strengthen Solar's safety committees and improve employee training programs. All new employees were acquainted with potential hazards of operations. Mr. Van Horn studied his employees' work habits. Special committees tackled health problems.

A pesky problem was sandblasting, necessary for virtually all Solar products. Research showed that use of garnet instead of silica reduced the silicosis hazard and improved sandblasting. Sandblast operators and welders receive x-ray examinations twice a year for further protection.

Noise is a persistent difficulty noise of fabricating stainless steel sheet on lathes and the din of punch presses, hammers and saws. Solar is now using rubber ear plugs designed by Mine Safety Appliances Co., Pittsburgh, to guard against injury.

Further safety improvements include safeguards in operating punch presses. For operations requiring the use of one hand to move parts in the dies, the control button will stop the press instantly on release. Other safeguards govern power roll operation.

Safety only a slogan to some has concrete meaning to Mr. Van Horn. Under his safety direction last year, Solar won an award from the National Safety Council for completing 1.7 million manhours without a lost-time accident.

Isaacson To Enlarge Plant

Isaacson Iron Works, Seattle, plans early construction of a $200,000 addition to its forge plant at 8531 E. Marginal Way.

GE Opens Test Building

The $1-million test building at General Electric Co.'s plant in Westover, N. Y., has started operations. Improved delivery on some critical items has advanced the anticipated completion date. The addition will be used for complete, controlled testing of aircraft armament systems which are being built by GE for Air Force bombers.

Norris-Thermador Buys Firm

Norris-Thermador Corp., Los Angeles, purchased A. J. Lindemann & Hoverson Co., Milwaukee appliance firm, for $1.8 million, and appointed Wm. E. Cranston, president of Thermador Electrical Mfg. Co., chairman of the board. The purchase will permit a step-up in both Thermador and Norris production of electrical appliances and domestic plumbing ware.

Muskegon Gets ASTE Chapter

American Society of Tool Engineers, Detroit, chartered its 111th chapter at Muskegon, Mich., officers of which are: Chairman, Paul Hornak Jr., B & B Engineering Co.; first vice chairman, Herbert Steinman, Brunswick-Balke-Collender Co.; second vice chairman, Vern Nephew, Manning, Maxwell & Moore; treasurer, John Baker, Norge Division, Borg-Warner Corp.; secretary, Ervin Byro, Industrial Tool Service Inc.

Adamas Names Representative

Adamas Carbide Corp., Harrison, N. J., manufacturer of carbide tools, tool tips, dies and wear parts, appointed Sooner Industrial Supply Co., Tulsa, Okla., as its sales representative.

Plans Enameling Conference

Uses of porcelain enamel as a large-scale structural material will be the subject of a conference to be held Nov. 12-13 at National Academy of Sciences, Washington. The conference is sponsored by Porcelain Enamel Institute, Washington, and Academy's Building Research Advisory Board. Discussions will cover: An analysis of chemical and physical properties of porcelain enamel; architectural applications of this material; its engineering properties, methods of sealing and insulating it; its use in combination with other materials.

Mag-Electric Products Formed

Mag-Electric Products Inc., Hawthorne, Calif., division of Karl Douglas Associates, was formed to manufacture magnetic amplifiers, portable gasoline engines and electric motor generator units.

Airtemp Plans Expansion

A $2-million construction program to expand production and storage facilities for Airtemp Division, Chrysler Corp., in Dayton, O., was outlined by Carl E. Buchholzer, president. He said rapid growth of the firm's air conditioning business has made the expansion necessary. He indicated future construction programs would be outlined as requirements grow.

Airtemp will add a building with 93,000 sq ft of floor space at the

north of its present plant. Another addition will be made on the east side of the plant. This will be an "open storage" facility, giving the division 83,000 sq ft of storage space.

Anaconda To Open Mine

Anaconda Copper Mining Co., New York, will open its $33-million open-pit mine at Yerington, Nev. The mine will produce 11,000 tons of disseminated oxide copper ore and 5 million lb of copper precipitate monthly.

Stromberg-Carlson Expands

Stromberg-Carlson Co., Rochester, N. Y., acquired all assets, patents, license rights and goodwill of Southern Electric & Transmission Co., Dallas. Southern Electric will be operated as a division of Stromberg-Carlson.

Stromberg-Carlson's Sound Division has expanded operations into a leased factory on University avenue, Rochester.

S-P Mfg. Appoints Agent

S-P Mfg. Corp., Cleveland, appointed Beverly D. Smith Co., Englewood, N. J., as its sales representative. S-P manufactures power chucks and air and hydraulic cylinders.

Ferguson Forms Subsidiary

H. K. Ferguson Co., Cleveland, engineering and building firm, organized a wholly owned subsidiary, H. K. Ferguson Co. of Canada Ltd., Montreal, Que. Morrison-Knudsen Co. Inc., Boise, Idaho, is the parent company of both. Officials of the Canadian firm are: O. F. Sieder, president; E. A. Charlton, vice president and general manager; John B. Kirkpatrick and W. N. Thompson, vice presidents; and F. H. Maag, secretary-treasurer.

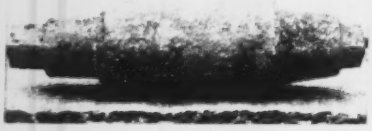
Clark Equipment Names Dealer

Clark Equipment Co., Buchanan, Mich., appointed Crunkleton Co., Charleston, W. Va., as a distributor of its materials handling equipment, including fork-lift trucks, towing tractors, powered hand trucks and Ross carriers.

Mackintosh-Hemphill Marks Milestone with New Roll

SOME 128 YEARS in the life of a Pittsburgh industry are bridged on this page by photographs of a steel mill roll made recently by Mackintosh - Hemphill Co., that city, and a plain iron roll cast about 1825 by Mack-Hemp's ancestor, the Pittsburgh Foundry.

In the intervening years, the Pittsburgh firm has cast more



PLAIN IRON ROLL
. . . cast in 1825 by Pittsburgh Foundry

than half a million rolls. Since 1870, Mackintosh - Hemphill has built 294 steam engines, 75 blooming mills, 45 universal mills, 48 engine lathes, 73 sheet and tin mills, 100 merchant and bar mills and 46 continuous rod mills. In addition to this iron and steel equipment, the company built 156 mills to roll brass, copper, zinc, lead and aluminum.

Sesquicentennial — Mackintosh-Hemphill's predecessor was founded 150 years ago. Joseph McClurg operated the old foundry to furnish merchandise for his general store in Pittsburgh as early as 1803. Pittsburgh, a thriving frontier town of 1500, was the "Gateway to the West," the last place where supplies could be purchased by west-bound pioneers.

In 1813, Mr. McClurg was supplying cannon and shot to Oliver Hazard Perry's fleet on Lake Erie. The same year he designed and built a boring mill to machine the cannon, putting his company in the machinery business.

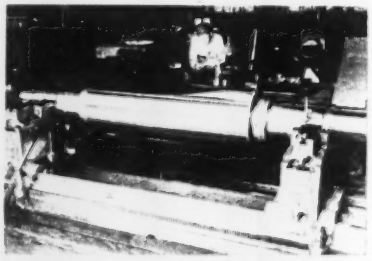
Forerunner—Later in that century, Mackintosh-Hemphill's predecessor produced the first chilled iron roll and the first locomotive built west of the Alleghenies. Other "firsts" were the first reversing blooming mill in the United States, the first Garrett rod mill and the first commercial rail straightening machine of its kind. The foundry also produced the world's largest howitzer, the Rodman cannon with a 20-in. bore, according to company records.

Four formerly independent companies now compose Mackintosh-Hemphill. Mack-Hemp itself was founded by James Hemphill in 1856. Pittsburgh Foundry, later known as A. Garrison & Co., became part of Mackintosh-Hemphill in 1922.

Setting Records—Col. James S. Ervin, president of the firm in this sesquicentennial year, says his company is enjoying a record year in more than age. Latest development at Mackintosh-Hemphill was announced last week. It is a new work roll which company officials believe may greatly simplify roll inventory practice in hot strip mills. The roll can be used in all stands of a hot strip mill finishing train.

Previously, spare rolls of two or three different hardnesses had to be stocked. That meant an inventory of possibly several hundred rolls for each strip mill. The new Mack-Hemp roll makes it possible to operate the mill with a minimum of replacement rolls on hand.

Fred C. T. Daniels, Mack-Hemp vice president in charge of metallurgy and research, points out that the alloy iron roll is a modification of the tempered anniversary roll



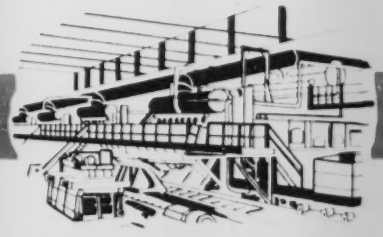
MIRROR-LIKE STEEL ROLL
. . . made recently by Mack-Hemp

the company announced earlier this year.

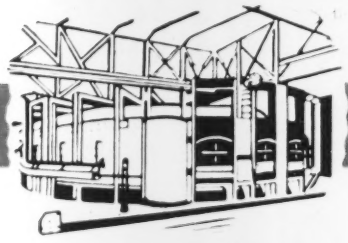
The new roll is double-poured and then tempered. Under usual practice, rolls of this type are poured initially at the hardness desired and used in this condition. The Mackintosh process consists of casting the roll at a high sclerescope and then heating or drawing it back to about 76/78 sclerescope.

Ask the men

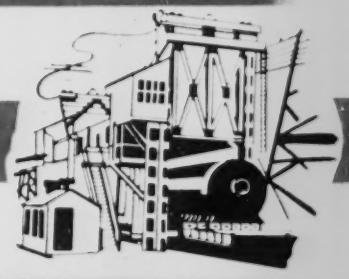
who operate them



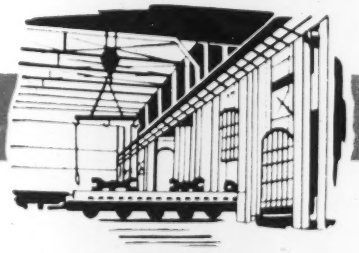
OPEN HEARTH · SLAB HEATING



ROTARY HEARTH · SOAKING PITS



ALL TYPES OF ANNEALING



CAR BOTTOM · FORGING · OTHERS

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do a better job for every metallurgical heating need

"Efficient . . . economical . . . automatic . . . all fuels . . . easy to operate . . . trouble free . . ." Furnace men attest the dependability of all types of Rust furnaces serving metal making plants throughout the world. Patented zone-fired installations account for more than one-third of the heating capacity (excluding soaking pits) of America's iron and steel industry. Also in general use are many of the Company's soaking pits. Rust builds both regenerative and recuperative type pits. Whatever your need there's a type of Rust Furnace (individually designed) to do your job.

THE WHOLE JOB IS ONE JOB WITH A RUST "PACKAGE" CONTRACT

One contract covers everything . . . from blueprint through start up. Rust assumes responsibility for design, manufacture, erection, and is prepared to undertake all phases of the work with its own forces, including wiring and piping. This results in substantial savings . . . One profit instead of pyramiding ones which accrue where many subs are employed.

RUST FURNACE COMPANY

Pioneers in Furnace Design

RUST BUILDING **PITTSBURGH, PA.**

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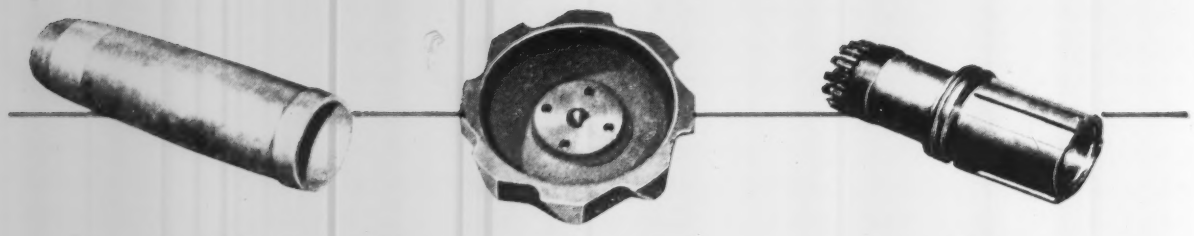
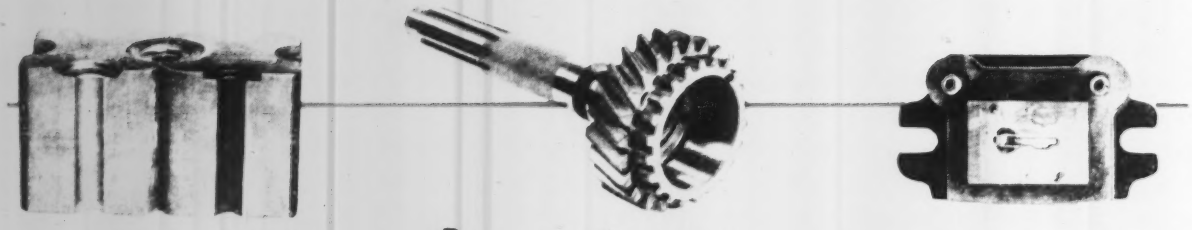
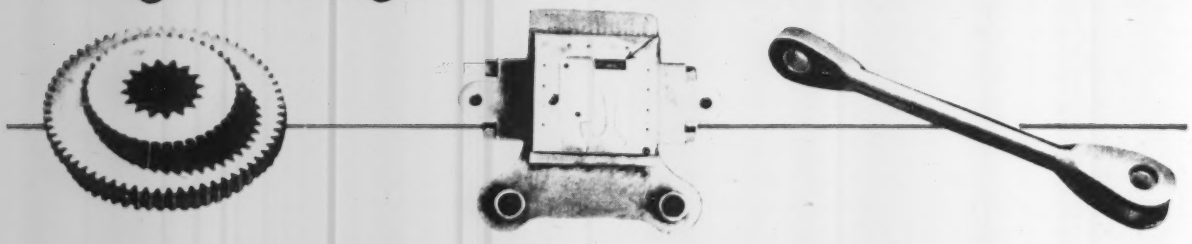


When heat treating troubles



get tough, it's time to turn



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the Fastest Quench this side of Water!

The properties you need for speedier, surer quenching demanded today are in Houghto-Quench. Any steel . . . even today's low alloy steels . . . gets uniform deep hardness in the Houghto-Quench bath.

Houghto-Quench has rapid wetting out ability . . . faster draining . . . less drag-out, hence lower cost per ton of steel quenched. It maintains proper fluidity in the bath. It dissipates heat quickly to give you faster quenching through the critical zone. Exceptional stability and oxidation resistance are assured by the Houghto-Quench formula.

Get further information from the Houghton Man — or write to E. F. Houghton & Co. Philadelphia 33, Pa.

One Source . . . for all heat treating needs — See "Liquid Salt Baths" — our latest booklet covering heat treating salts for carburizing, neutral hardening, annealing, tempering, martempering and other heat treating operations. Get a copy.

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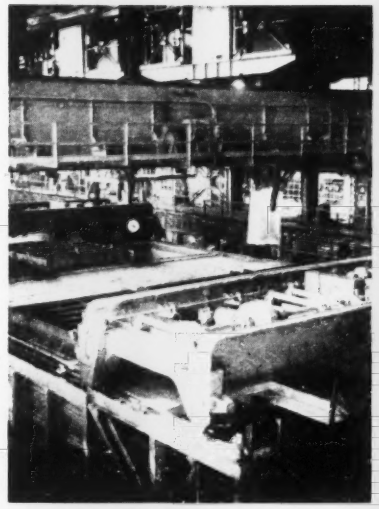


Raised to Uniform Heat

A hot 16-ton slabbing ingot is lifted at one of Pittsburgh Steel Co.'s new soaking pit furnaces at Monessen, Pa., and starts its way to become sheet. Completion of two blocks of soaking pit furnaces, in foreground, brings total of new blocks in operation to four

Technology Contest Announced

Annual student contest in porcelain enameling is sponsored by Ferro Corp., Cleveland, manufacturer of porcelain enamel and clayware frits, for the current school year. Prizes totaling $1000 will be awarded for the best papers on porcelain enameling technology at the annual convention of American Ceramic Society, Columbus, O., next spring. Entry blanks must be mailed to the sponsor by Nov. 23; papers must be submitted on or before Feb. 26, 1954.

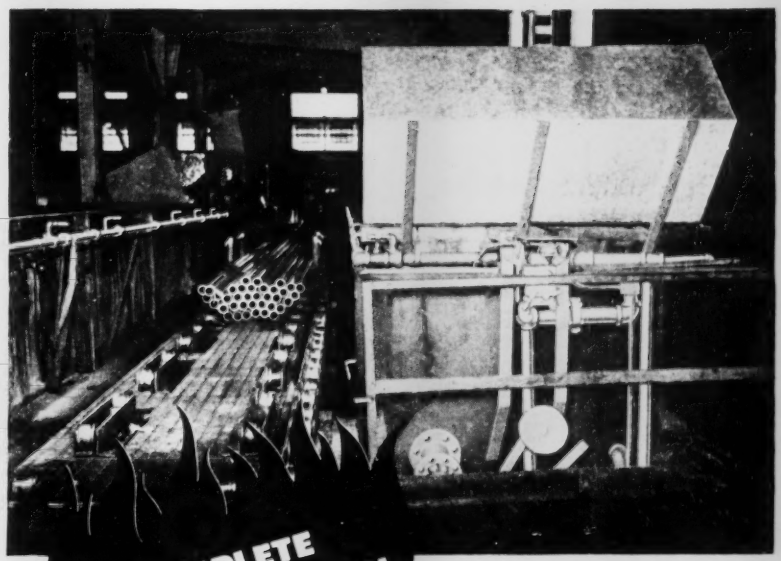
Snap-Tite Appoints Agent

Snap-Tite Inc., Union City, Pa., manufacturer of couplings, appointed Gulf States Distributing Co., Houston, as its sales representative in that territory.

Hygrade-Atlas Expanding

Hygrade-Atlas Inc., Newark, N. J., manufacturer of liquid pressure filters and metal surface treating equipment, purchased the plant and full manufacturing facilities of Carbondale Industries Inc., Simpson, Pa. Hygrade-Atlas

(*Please Turn to Page* 104)



COMPLETE FIRE PROTECTION FOR EVERY PLANT INCLUDING YOURS!

Illustrated here is a dip tank cleaning operation, a Hot Spot fire hazard area common to many types of metal working operations. But, although fire may start at this particular location — it cannot make headway, for ENGINEERED "Automatic" FIRE PROTECTION is "on the job" at all times.

At the first hint of flame, heat sensitive fire detectors operate controls that dump flammable liquids, stop conveyor systems and discharge fire-smothering "Automatic" FIRE-FOG and AIR FOAM throughout the danger area.

ENGINEERED "Automatic" FIRE PROTECTION starts with an analysis of your needs for complete sprinkler coverage. It includes study of manufacturing and processing operations, as well as machinery and equipment which may, in addition, demand special protection such as FIRE-FOG, AIR FOAM, CO_2 or a combination of these extinguishing mediums. The need is dictated by the degree of hazard, demand for personnel safety, high value of equipment, critical nature of certain processes or operations to entire plant production, continuity of business operations.

Want to learn how ENGINEERED "Automatic" FIRE PROTECTION can safeguard your plant — save you dollars while doing it? FREE descriptive literature is yours for the asking. Write for Bulletin 66.

Investigations and post mortems that look into the "causes" of a serious fire bring back nothing . . . are but mildly beneficial to anyone. The fire, discovered at its start, and extinguished in its infancy, cannot result disastrously.

"Automatic" Sprinkler
CORPORATION OF AMERICA
YOUNGSTOWN, OHIO
Offices in principal cities of North and South America

TROUBLE-FREE PHOSPHATIZING
with Pennsalt's outstanding NEW

FOSBOND

A COMPLETE SYSTEM—EVEN INCLUDING A DYNAMIC MERCHANDISING PLAN!

If phosphatizing has been a headache in your plant, here's the news you've been waiting for! Now Pennsalt, long a leader in the metal processing field, offers everything you need for uniform, trouble-free phosphatizing—for better, longer-lasting finishes.

The Fosbond Process comprises various Pennsalt-made chemicals for all operations from cleaning, pickling, and phosphatizing, through rinsing. They have been engineered to provide an excellent pre-paint corrosion-resistant surface while offering simplified operation through an entire balanced cycle. Major finish manufacturers have approved Fosbond for use wherever phosphate coatings are required under organic finishes.

Sound Technical Assistance

To help Fosbond users initiate and maintain this Process, Pennsalt offers technical assistance—on a regular, scheduled basis—from qualified, experienced specialists. These men will get the Process running smoothly on your operation and help you keep it that way.

But that's not all! Fosbond has qualified for the famous *Good Housekeeping Guaranty Seal*, which has been incorporated into the colorful Fosbond emblem (see illustration). To gain wide public acceptance, this new merchandising symbol is being advertised in *Good Housekeeping*, *The Saturday Evening Post*, and other publications. Authorized manufacturers may affix this emblem to their Fosbonded products—thus gaining a valuable sales "extra."

Ask us to prove it!

So you can see actual Fosbond test panels for yourself, we will send you either Fosbond chemicals with which you can prepare panels, or panels prepared in our laboratories which you can then test. You be the judge! Just tell us 1) type metal to be phosphatized, 2) phosphate coating now used, 3) method of application, 4) organic finish used, 5) standards finish must meet.

Or, give us details about your operation, and we shall gladly answer questions about Fosbond as specifically as possible. Write: Metal Processing Dept., 463 Widener Bldg., Philadelphia 7, Pa.

PROCESS

A COMPLETE SET OF COMPOUNDS

for cleaning, pickling, phosphatizing, and rinsing. All from one reliable source—Pennsalt

APPLIED IN A BALANCED CYCLE...

tailor-made by Pennsalt engineers to fit your operations and equipment

SERVICED AND MAINTAINED...

by experienced field servicemen on a regular, scheduled basis

ADVERTISED AND MERCHANDISED

to help pre-sell your quality finish to wholesalers, dealers, and consumers

At Pennsalt's famous Whitemarsh Research Laboratories, where Fosbond was developed, there are unusually fine testing facilities at the disposal of manufacturers using the Process.

FOSBOND IS A PENNSALT TRADEMARK

A better start for your finish

Pennsalt Chemicals

PENNSYLVANIA SALT MANUFACTURING COMPANY

AUTOMATION with FEDERAL WELDERS CAN CUT COSTS!

Automation is a word invented by production-minded people to describe the automatic handling of material in process, the combining of two or more operations into a single operation to reduce costs and speed production.

Perhaps one of the greatest advances of automation has been made in the resistance welder field where Federal has taken the lead in designing and building welders that have successfully combined forming, handling and/or assembly with welding.

This advancement has, in many production shops, actually eliminated the "welding bay," and made welding an all-important station in the production line.

If welding is part of your operation you should get the facts of cost-cutting automation in resistance welding, and to make sure of getting the complete story consult Federal — "First in Resistance Welding."

Federal® WELDERS

THE FEDERAL MACHINE & WELDER COMPANY

WARREN, OHIO

Warco PRESSES®

(Continued from Page 101)

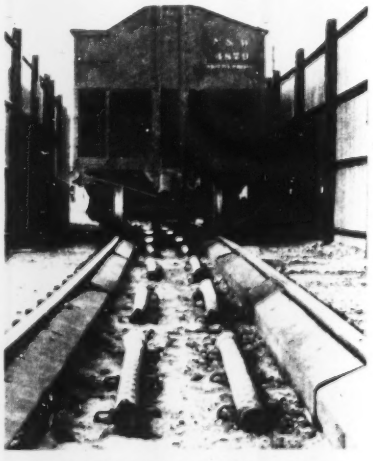
will close its present plant at Hillside, N. J., and will conduct all its manufacturing in the Simpson plant. The company's operations will be expanded.

Buffalo Forge Expands

Buffalo Forge Co., Buffalo, spent more than $1 million in the last year and one-half for new tools and for expanding facilities. Outlays were made at both the Buffalo and the North Tonawanda, N. Y., plant of Buffalo Pumps Inc., a subsidiary. Most of the outlay was for new tools. It also included the erection of a large shipping, receiving and storage building at Buffalo Forge in Buffalo.

Carrier Forms Three Divisions

Carrier Corp., Syracuse, N. Y., is establishing three major operating divisions, each of which will engineer, manufacture and market its own product lines. The three operating groups will be Allied Products Division, Machinery & Systems Division and Unitary Equipment Division. In addition, there will be a central staff consisting of specialists in production, market-



New "Hot-Foot" for Cars

Jet heaters encased in short lengths of perforated 4-in. wrought iron pipe serve this new car thawing device, developed by Norfolk & Western Railway to thaw raw materials frozen in open hoppers in winter. Corrosion resistant wrought iron pipe is specified due to its ability to withstand intense heat and exposure to atmosphere

NO NEED FOR SEVEN LEAGUE BOOTS FOR BIG LEAGUE STEEL SERVICE

Just one, easy step puts you in touch with a wealth of tooling and production help. When you call your Carpenter Mill-Branch Warehouse or Distributor you set a team of steel specialists to work on any of your requirements involving specialty steels.

If you're after something *more* than deliveries, alone, consider this: Here, awaiting your call, are printed technical booklets, data sheets and other service literature designed to solve a variety of tooling and production headaches . . . field engineering service to help you get the most from every pound of steel you use . . . as well as in-plant job assistance when the going gets rough. And when necessary, this service brings you the experienced counsel of metallurgists direct from the Reading Mill.

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Everywhere

that TUBING is used and UNIFORM WALL THICKNESS is a requirement, WALLINGFORD WELDED CARBON ALLOY or STAINLESS TUBING MEETS SPECIFICATIONS

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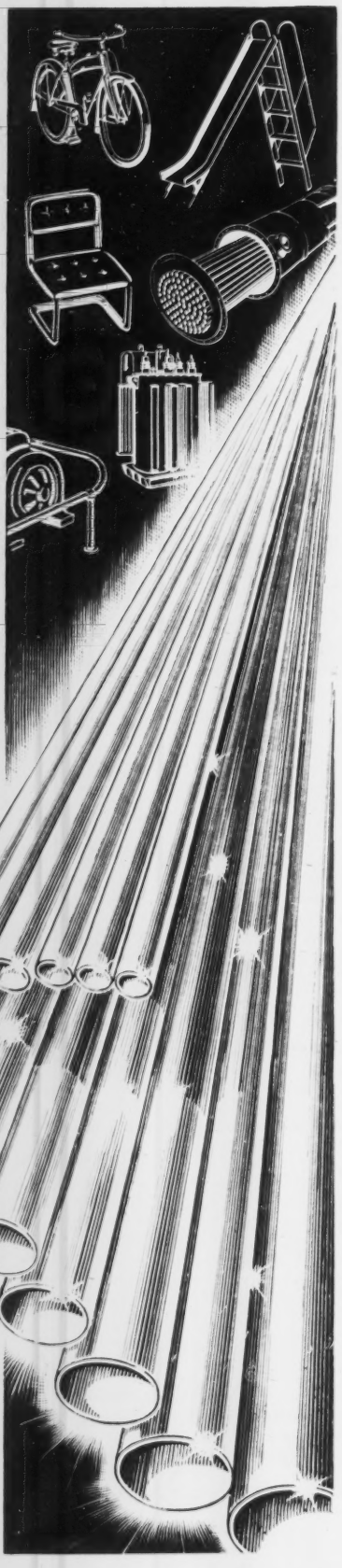


THE WALLINGFORD STEEL CO.
SINCE 1922
WALLINGFORD, CONN., U.S.A.

ing and engineering, which includes both research and development.

Brennan To Rebuild Plant

John Brennan & Co., Cicero, Ill., manufacturer and distributor of building materials, will erect two steel-frame, metal-covered buildings and a brick office building to replace the manufacturing and storage plant destroyed last July in a $1,250,000 fire.

Tech Steel & Alloy Formed

Tech Steel & Alloy Corp. was organized with headquarters at 843 N. California Ave., Chicago 22. Officers of the firm are: Louis M. Venture, president, and Harris R. White, vice president. Albert Korsgaard is office manager. The company will supply hot-rolled and cold-finished alloy and carbon steel bars.

Forger Observes 40th Year

Steel Improvement & Forge Co., Cleveland, is observing its 40th anniversary this year. The firm increased its plant space by more than 30 per cent during the past two years through a $2.5-million expansion program. More diemaking, finishing and inspection equipment and more heat treating furnaces, hammers and presses have been added to its facilities under this program.

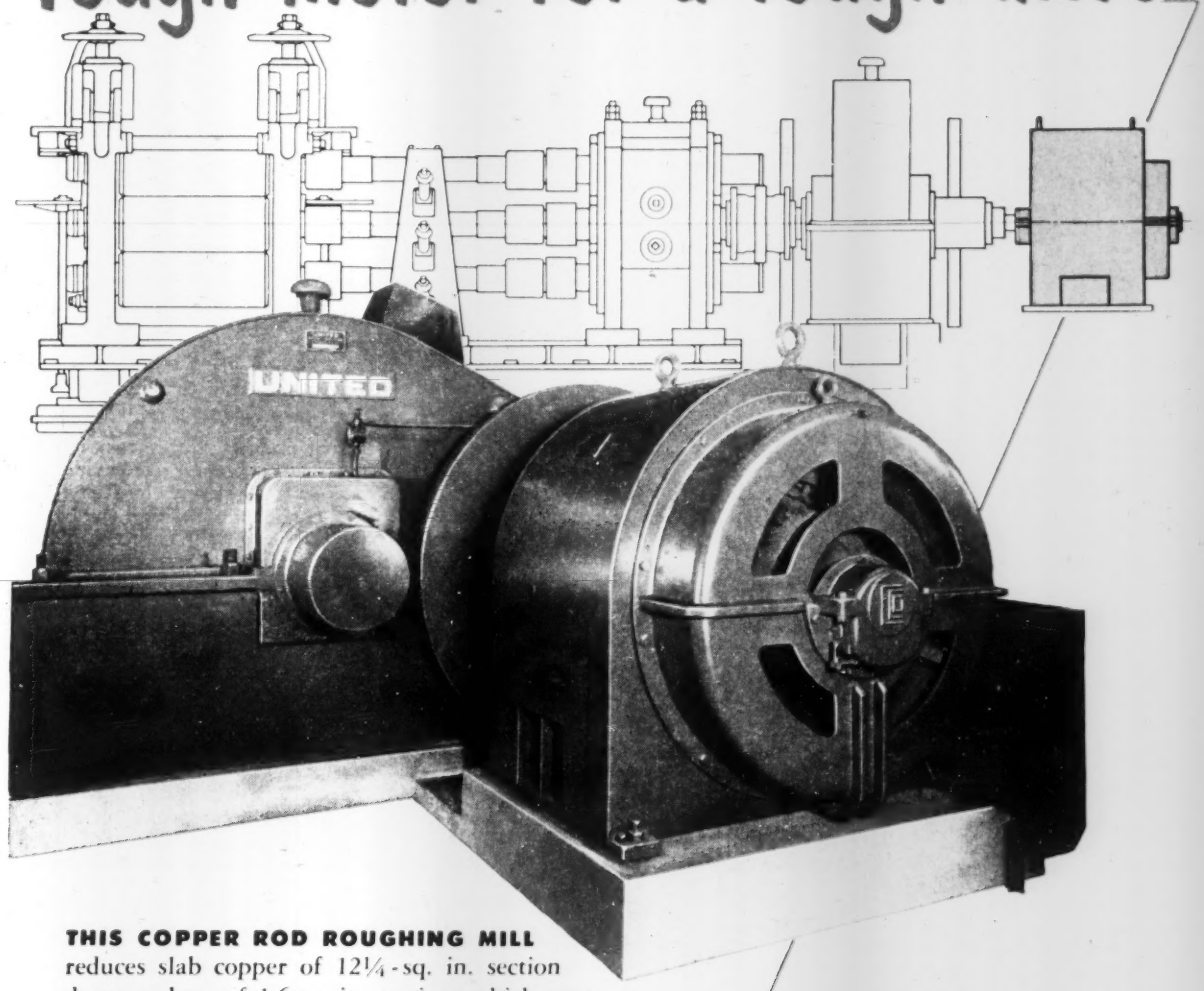
Evinrude Motors Expanding

An 85 per cent increase in factory and office space is being made by Evinrude Motors, Milwaukee. The expansion will add about 115,000 sq ft of floor space and will cost over $1.5 million. The project will be completed by June, 1955. It will require about 600 tons of structural steel, 200 tons of reinforcing steel and 3 miles of plumbing pipe.

Pivot Punch Retools Plant

Pivot Punch & Die Corp., North Tonawanda, N. Y., completed installation of about $750,000 in heavy tooling equipment. Most of the equipment has been put into the plant for expansion of the fabrication, finishing and machinery

Tough motor for a tough drive



THIS COPPER ROD ROUGHING MILL reduces slab copper of 12¼-sq. in. section down to bars of 1.6-sq. in. section, which certainly ranks as rugged service, demanding a motor that can take shock and heavy current surges. The American Brass Company selected an Elliott motor to drive this new mill, built by the United Engineering & Foundry Company.

The motor is an 800-hp, 710-rpm Fabri-Steel wound-rotor induction motor, with a 300% pull-out torque, driving through gears with a ratio of 6.85:1. Elliott fabricated steel construction provides the rigidity and sturdiness required for this extremely arduous service.

ELLIOTT MOTORS

are widely recognized for their performance in heavy mill drive service. For full details on these motors in their various types, contact your local Elliott engineer, or write Elliott Company, Ridgway, Pa.

Elliott FABRI-STEEL

ELLIOTT Company

RIDGWAY DIVISION

FOR MOTORS 1-200 HP CROCKER WHEELER DIV. AMPERE, N. J.

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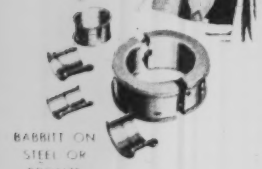
ECONOMIES IN PRODUCTION?

then study
JOHNSON SLEEVE BEARINGS



THE sleeve bearing is much lower in original cost than any other type from which you may choose. In over 90% of your applications a Johnson Sleeve Bearing will give long, trouble-free service . . . in many instances, for the life of the product in which it is installed. It is quiet, corrosion resistant, conformable, and simple in construction. Possibly you are buying more bearing than you need. You can simplify and save with Johnson Sleeve Bearings. They are available in cast bronze, cast aluminum alloy, bronze-on-steel, aluminum-on-steel, babbitt on steel or bronze, molded powder metal, and graphited types. Johnson engineers will gladly consult with you on changing your designs to use economical Johnson Sleeve Bearings. Write for an appointment.

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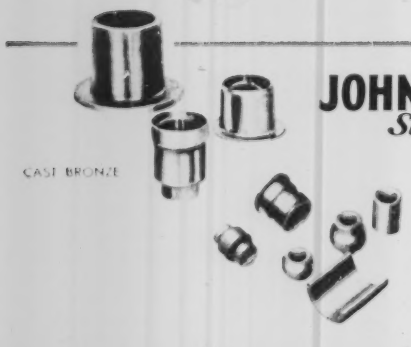
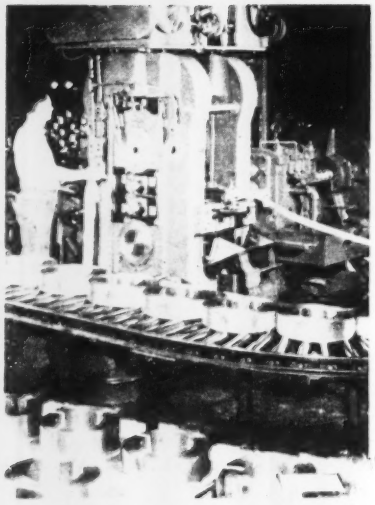
550 South Mill St., New Castle, Pa.



JOHNSON B BEARINGS
Sleeve-Type

SLEEVE BEARING HEADQUARTERS SINCE 1901



Beryldur Shines at Debut

Beryllium-copper strip, shown in this cold-rolling operation, is Beryldur, a new alloy developed by Beryllium Corp., Reading, Pa. It has a low beryllium content of 1 per cent and retains high-strength, good conductivity values

rebuilding divisions. James G. Deckert, comptroller, has been appointed secretary and a director of the company.

Reliance Shifts Personnel

Reliance Electric & Engineering Co., Cleveland, opened a direct factory sales office in San Francisco. The company also transferred Walter A. Jensen from its Buffalo office to San Francisco where he reports to Andrew C. Perrin, West Coast district sales manager. Perry Dudley Jr. is transferred from Cleveland to Los Angeles where he reports to H. A. Latta, manager of Reliance's office in that city. Replacing Mr. Jensen in Buffalo is Peter W. West, also from the company's Cleveland headquarters.

Tennant Forms Subsidiary

C. Tennant, Sons & Co., New York, established a subsidiary company, Tennant (Peru) S. A., Lima, Peru. Like the parent company, the Peruvian firm will devote its main activities to the export and import of ores and concentrates, metals, industrial chemicals and other raw materials for industry. Aubrey Fletcher is resident managing director of the new company.

4 HIGH, 5 STAND TANDEM

HOT ALUMINUM MILL

Designed and Built by

UNITED

ENGINEERING AND FOUNDRY COMPANY

PITTSBURGH, PENNSYLVANIA

Plants at PITTSBURGH • VANDERGRIFT • NEW CASTLE
YOUNGSTOWN • CANTON

Subsidiaries: ADAMSON UNITED COMPANY, AKRON, OHIO
LOBDELL UNITED COMPANY, WILMINGTON, DELAWARE
STEDMAN FOUNDRY AND MACHINE CO., INC., AURORA, INDIANA

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UNITED *can serve you no matter where in the world you are.*

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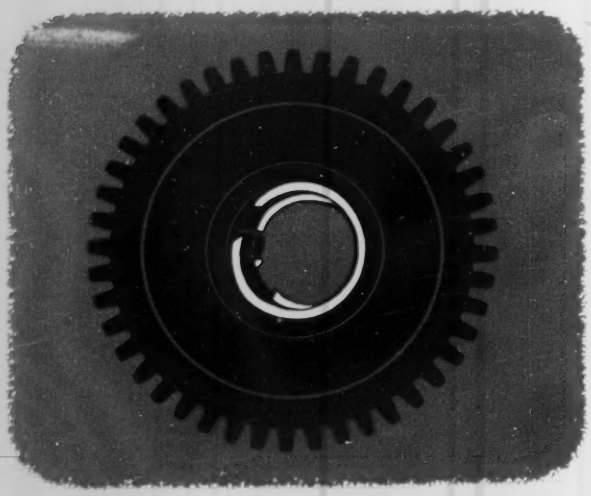

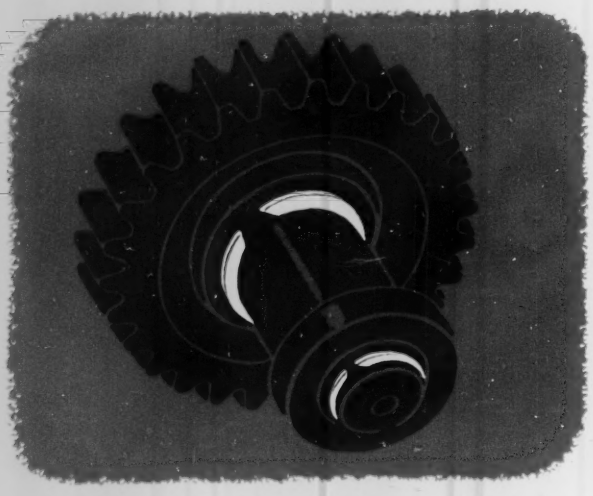

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Technical Outlook

IN THE CHIPS—Large Detroit firm reports it has doubled tool life and improved chip formation by following a new formula that covers such things as proper angles for rake and clearance and optimum tool shape. Information, the result of research on chip breaking sponsored by several machine tool companies under the auspices of the National Machine Tool Builders' Association, is available in a booklet and wall chart.

OLD AND NEW— NEMA rerated motor and its predecessor ran side by side in the GE booth at the recent 35th National Metal Exposition in Cleveland. It's understood the smaller, lighter motor is now available in limited quantities for test purposes.

NOT-SO-MUSICAL CHAIRS—Familiar rattle of metal folding chairs being handled can be toned down by covering both inner and outer surfaces of tubular steel components with a phosphate coating and enamel. So reports Parker Rust Proof Co., Detroit.

SILENT TRUCKS—Noises offensive to the ear are said to be eliminated by a new exhaust system for GMC trucks. Mufflers are a reverse-flow type, larger than previous units and made more rigid by use of heavier gages of metal. By next month, they'll be standard equipment.

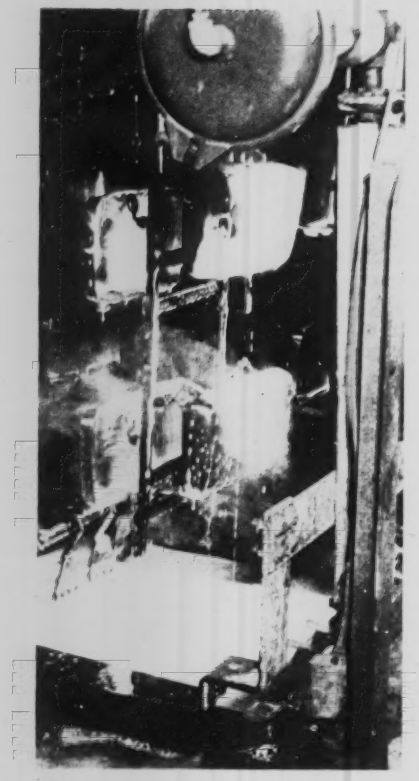
STUDY TRACE IMPURITIES—In the process of keeping pace with the exacting needs of industry, metals manufacturers must continue their critical evaluation of the older metals in their pure form, according to the latest Battelle Technical Revue. Most metallic elements have been isolated in a pure enough state to make principal properties known. Yet metallurgists do not know the full effects of trace impurities on the properties. Careful investigations of the effects may well lead to further improvements in the qualities of commercial metals and their alloys. Such studies may also aid in future alloy design by allowing metallurgists to choose metals to fit the performances required, the review concluded.

NUCLEAR POWER REACTORS— We can build them from available materials, says Dr. W. A. Johnson, manager of the Westinghouse Atomic Power Division's reactor and materials departments, but engineering know-how must step in to unknot the metals dilemma. Limited choice of metals arises from fact they must combine unusual physical engineering properties and serve a nuclear function—or, at least, satisfy certain nuclear restrictions.

WASHINGTON TALK— Top priority has been given to specifications and standards in the reorganized Department of Defense. A function of the Federal Supply Service, the standardization program is in the hands of the Standards Division.

TINY SPLIT DIE—Grinding a wire drawing die no bigger around than the head of a kitchen match was done recently with a Pratt & Whitney Diaform wheel. Even more astounding were the tolerances: Plus or minus 0.0002 inch. Unusual job necessitated a preliminary template of 100 to 1 instead of the usual 10 to 1 ratio. This template, made of 3/32-inch flat stock was used with the Diaform and a 100-GV wheel to produce the 10 to 1 template. Two pieces of correct diameter wire were then placed in a V block and ground to required form and thickness.

Metalworking Outlook—p. 161 Market Outlook—p. 177



Selection of Metal Cleaning Cycles

Final decision hinges upon answers to a number of questions, such as type of metal, the soil, level of agitation, performance standards, water supply and cleaner

By DR. SAMUEL SPRING
Research and Development Division
Pennsylvania Salt Mfg. Co.
Philadelphia

PART I

SELECTION of a metal cleaning cycle involves a number of considerations, including the metal, the soil, level of agitation, performance standards, water supply and, lastly, the cleaner itself.

Discussion here can serve as a general guide in the analysis of plant cleaning problems, although the information could solve individual problems.

Nature of Metal—Softer, nonferrous metals tend to pick up solid soils or become scratched during processing, and most of them, such as aluminum and zinc, are sensitive to attack by strong alkali materials, prohibiting the use of some of the heavier duty cleaners.

Where soft metals are heavily soiled or have embedded solid soils, the cleaning problem is difficult, but, fortunately, they usually can tolerate special techniques or cleaners.

Of course, rougher surfaces are more difficult to clean than smoother ones, but, on the other hand, presence of oxide films may mean hard or easy cleaning. In work conducted some years ago, we found that the specific effect is dependent upon the nature of the soil: Fatty soils were removed with greater difficulty from oxide-covered surfaces, while mineral oil soils were removed more readily.

Soils — Generally, the cleaning cycle must be adapted to the soil. Some relief can be obtained where there is a choice between hard-to-remove and easy-to-remove lubricants, but, unfortunately, the best lubricants tend to be the most difficult to remove.

Soils may be classified in three general groups: 1. Oily. 2. Semi-solid or grease-like and 3. Solid.

Cleaners vary in ability to remove different soils. For this reason, a cleaner used under identical conditions may be especially good in one application and poor in another.

Aging—There is one rule that is fairly universal: Most soils become progressively harder to clean as they are allowed to age on work. The shopman can help here by scheduling work to keep the time interval between soiling and cleaning at a minimum.

Soiling might involve buffing or application of a lubricant followed by forming of the metal. In the latter case, it is desirable to have a cleaning operation follow forming as soon as possible. It may be nothing more than immersion in hot water to remove the bulk of the soil prior to storage, or even

This is the first of two articles on the subject by Dr. Spring, an authority on metal cleaning and surface preparation chemistry. Second article, which will appear next week, will cover available water supplies and cleaners.

FACTORS IN THE SELECTION OF CLEANING CYCLES

The Metal
- a. Nature, e.g., steel, aluminum, zinc, etc.
- b. Roughness
- c. Oxidation state

The Soil
- a. Nature, e.g., mineral or fatty oil, grease, etc.
- b. Aging conditions

The Level of Agitation
- a. Soak tank cleaning
- b. Spray cleaning
- c. Electrolytic cleaning

Standards of Performance

The Available Water Supply
- a. Hardness
- b. Rinsing

The Cleaner
- a. Type for different soils, etc.
- b. Cycles
- c. Operating conditions

better, use of a hot alkaline cleaner.

Because of specific interactions between cleaner and soil, the person responsible for cleaning should know the basic nature of the soil. This type of information may be obtained from plant laboratories or those of the supplier.

Scale, Rust — Separate cleaning and pickling may be required here, but if scale or rust is not excessive, a single pickling and cleaning material may be employed. Usually, a phosphoric acid base and a surfactant system are involved. Cleaners of this type are available for both immersion and spray applications, and they leave the surface somewhat resistant to further rusting when followed by a hot, chromic-acid rinse.

Special cleaning cycles generally must be devised for semi-solid and solid soils. One of the major factors is the physical movement of solid soils from the metal surface into the cleaner. This is in contrast to oily soils where oil buoyancy and mobility of liquids favor removal. Agitation is the top consideration in the removal of semi-solid and solid soils.

Agitation—Level of agitation, a vital decision, usually boils down to a single consideration — cost. Electrolytic cleaning offers greatest agitation, followed by spray and soak tank cleaning. Each type has its pros and cons, and to get optimum results in each instance, certain procedures must be followed.

Soak—Step-by-step photographs we have taken during removal of oil from a surface depict some factors involved in detergency. Fig. 1 shows a metal panel sub-merged in an alkaline cleaning solution. Cleaner causes oil to shrink with the formation of discontinuities in the oil film (Fig. 2). In certain areas, oil gathers into the form of globules, which break away from the body of the oil and float to the surface.

Process continues until isolated patches of oil remain on the surface, some of which are globular Fig. 3). Still later, remaining patches develop a globular form and eventually are removed from the surface as the area of attachment to the metal is reduced by surface active materials in the cleaner, as illustrated by removal of oil from wire (Fig. 4).

Import — During the globule stage, it is possible to shake off most of the oil with limited agitation, while in early stages, agitation is almost without effect.

Agitation may involve withdrawing work from the cleaner and re-immersion — this is an excellent way to remove loosely-attached globules. Wherever possible, it is well to maintain soak cleaners at a rolling boil, so that escape of steam provides turbulence next to the work. At the same time, high temperature keeps the soil in a more fluid condition, which improves detergency and makes the soil easier to remove.

Another successful technique uses a pump that circulates hot cleaner over the work area. If pumps of sufficient capacity are used, an excellent level of agitation is provided. Less effective is the compressed air line to stir the solution. Difficulty usually is lack of direct contact with the work and cooling of the bath.

Spray — Agitation by spraying

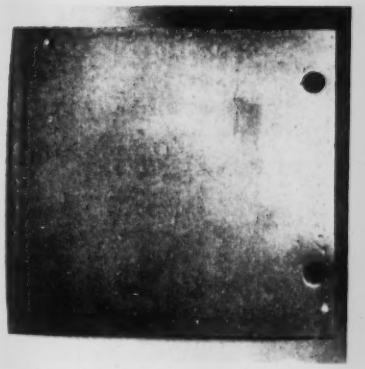


Fig. 1 — Metal panel sub-merged in an alkaline cleaner

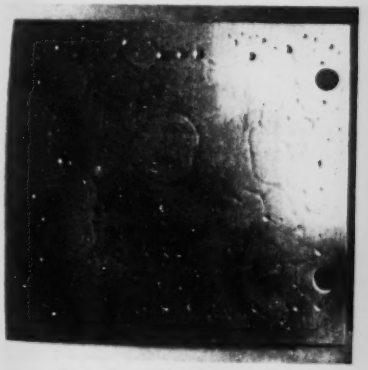


Fig. 2 — Discontinuities form, oil starts to shrink

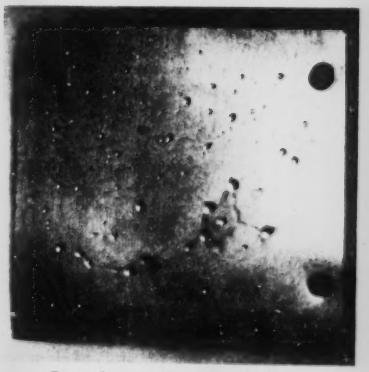


Fig. 3 — Isolated patches remain; some are globular

Fig. 4 — Area of attachment of globule is reduced

INFLUENCE OF SURFACE ROUGHNESS ON CLEANING

Surface Treatment	Cleaning Index Unpickled	Pickled
Cold rolled	86	44
Ground, fine wheel	83	50
Ground, medium wheel	62	—
Ground, coarse wheel	56	47
Shapered	30	12
Sandblasted lightly	14	16

INFLUENCE OF OXIDE ON STEEL ON CLEANING WITH DIFFERENT OILS

Treatment	Cleaning Index Mineral Oil	Sulfurized Fatty Oil
No acid treatment	97	20
Acid treatment to remove oxide	47	55
Passivation (oxidation) with nitric acid after acid treatment	85	17

Note: Data were obtained by procedure developed by author. Panels are cleaned under carefully controlled conditions and sprayed with water. Droplets of water condense over soiled areas. These are sketched, and the percentage of surface area cleaned is estimated. Average is reported as cleaning index.

hot alkaline cleaner over the work surface is effective, but, of course, cleaners must not contain significant amounts of soap-like surfactants because of foaming. Nevertheless, high surface activity of certain alkaline salts, such as alkaline silicates, is important in providing detergency in addition to the mechanical action of the spray.

Obviously, the higher the spray pressure and the more direct the impingement of the spray on the work, the better is the mechanical removal of soil. It is usually necessary to compromise by having a cleaner with some surface activity. Thus at maximum spray pressures, there is a tendency to have some foaming.

By cutting back pressure, it is possible to have detergent in addition to spray action and still keep cleaner from running all over the shop.

One reason for this is that every portion of the work surface is not hit directly by the spray. This is one of the problems in spray cleaning where complicated shapes are involved, or where a machine designed for one size part is used for other sizes. It is well to be certain spray impinges directly on most heavily soiled areas.

Operation—In most cases, discard cleaner in spray machines fairly frequently. When soaps, built up by reaction between cleaner and soil, accumulate, there is a tendency toward excessive foaming. In the later stages of cleaning, it is frequently possible to control foam by addition of kerosene. Silicone defoamers are to be avoided if work is to be painted at a later stage, since they prevent adherence to paint.

In spray applications, alkaline cleaner is normally used at a considerably lower concentration than in soak operations. Discarding such a bath represents a relatively small loss of chemicals. Alternately, emulsion cleaners, diluted with 50 to 100 parts of water, may be used in spray machines where it is desired to remove excessive soil or where foaming is a problem.

This must be followed by an alkaline cleaning operation prior to electroplating, since emulsion cleaners leave a surface that sheds water, due to a thin, adsorbed layer of oily material. This would interfere with electroplating, but is frequently satisfactory for painting.

Electrolytic Cleaning—Gas, generated by electrolysis of water, develops on the surface close to the soiled area. This violent agitation is particularly desirable in the removal of solid soils and smuts that resist cleaning under other conditions. Equipment needed may entail a large capital investment in many plants, but the method is almost universally used in the electroplating industry.

Electrocleaning may be anodic or cathodic. Latter generates twice the volume of gas that the former does, but there is the threat that traces of impurities will be deposited on the work surface. For this reason, cathodic cleaning followed by a short anodic (reverse) current cleaning operation is preferred. It is not unusual now to use anodic cleaning exclusively for the removal of soil prior to electroplating.

Standards—Cleaning cycle chosen will determine degree of perfection. In the electroplating industry, standards are high and multiple stage cycles are frequently required. Depending upon degree of soiling, two or three cleaning operations may be involved in the process.

For heavily soiled materials, a vapor degrease or emulsifiable solvent soak might be required, followed by a soak cleaning operation in an alkaline cleaner and then an electrocleaning. Acid dip, to remove metal oxides developed during cleaning, is almost a necessity.

At one time, it was thought that this acid dip was necessary only if silicated cleaners were used, but careful investigation has disclosed it is necessary when any kind of alkaline cleaner is used. It functions mainly to remove lower metal oxides rather than alkaline cleaner residues.

Conveyors Roll Profitable Combinations

Twin conveyor lines combine testing, tagging, strapping in the fine wire mill, each requiring seven men to complete 70 coils per hour

COMBINING similar or related operations wherever possible has eliminated some inefficient and uneconomical practices at the Steel Wire Mills Division, John A. Roebling's Sons Corp.

The division processes steel rods into round and shaped wire coils of many grades and specifications, the largest single group consisting of wire rope. The variety of other wire produced includes bridge, shaft, hose, tire bead, grommet, spring and music wire. Industry demands make it necessary to process rods ranging in diameter from 0.437 to 0.187-inch into wire 0.375 to 0.003-inch in diameter. This diversification requires considerable flexibility of methods and equipment.

Combinations — In the coarse wire mill, two gravity conveyor lines are equipped with power strapping machines. Each line prepares for shipment an average of 60 coils per hour, ranging from 90 to 600 pounds.

Two employees operate each line. Coils, placed on a gravity feed roller conveyor by an electric hoist, move along the conveyor to an automatic power strapping machine. There an operator removes mill bands, cuts sample ends for test, attaches tags and places required number of straps on each coil. The strapped coil then moves to the conveyor end where it is removed by electric hoist and placed in temporary storage.

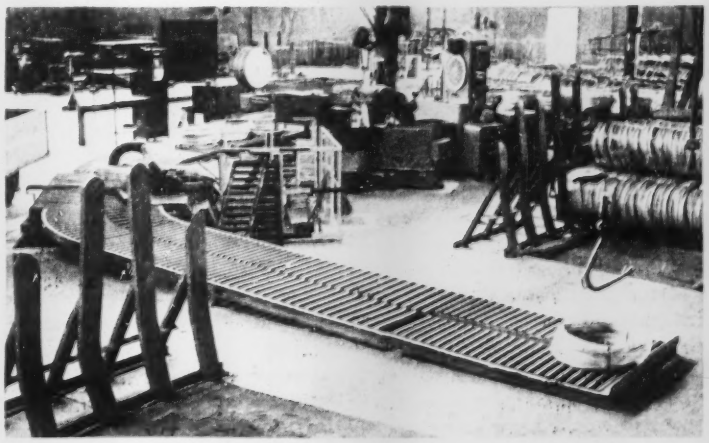
Test, Tag, Strap—In the fine wire mill, two gravity conveyor lines combine testing, tagging and strapping coils for shipment. Each line processes an average of 70 coils per hour, ranging in weight from 90 to 400 pounds.

As wire moves along the conveyor, samples are cut from each coil for torsion, tensile, elongation, mandrel, kink and gage tests. Coils are split into approximate weights when necessary. Prepared test records and data tags are attached to each coil before power strapping. Then coils are segregated and placed on skids by power hoist. Seven employees are required to operate each line.

Galvanized wire ready for shipment is processed over a line equipped to test, weigh, tag and strap coils in conformity with customer specification. Four men are required to handle an average of 50 coils per hour on this line.

Labor, Space, Time—The company reports its combined operations prove economical from both labor and spacesaving angles. They prepare more than twice the quantity of wire per manhour for shipment than was formerly possible. Other results: Closer supervision and increased control over material identification.

Due to reduction of time required to process wire through preparation-for-shipment operations, the firm has slashed time finished goods must remain in inventory. They emphasize this factor by reporting wire drawn in the morning can be shipped to the customer the same afternoon.

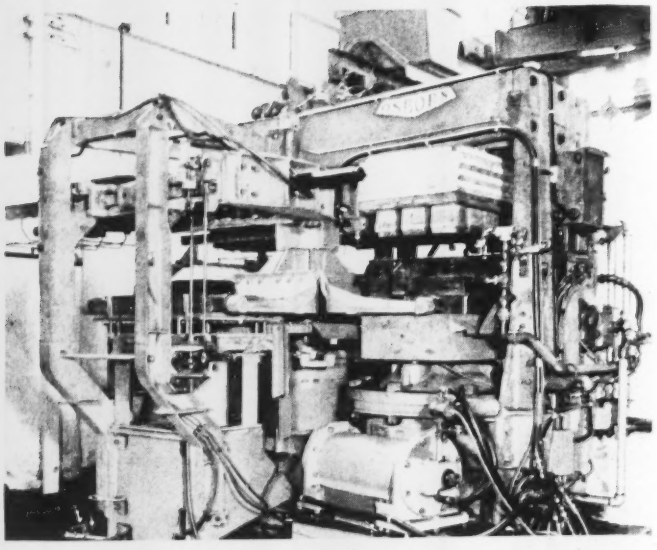


Four men operate this galvanized wire line, processing ready-to-ship wire coils through test, weigh, tag and strap at about 50 per hour

Mechanization Takes Over Sand Molding

Automatic molder being installed at Buick will be capable of producing cylinder block halves at rate of 240 per hour, shallower molds at 300 an hour

By LEON F. MILLER
Vice President, Machine Design
Osborn Mfg. Co., Cleveland



Molder developed at Osborn plant before going to Buick's foundry. Test pattern was wood mockup; other equipment was standard

ROTARY AUTOMATIC molding machine developed by Osborn Mfg. Co., Cleveland, indicates an improved production method for making sand molds in which various types of castings are produced.

In development stages for more than two years, this unit is being placed in operation in the foundry at Buick Motor Car Division. Tests indicate that the 80,000-pound machine will be capable of producing cylinder block half molds at the rate of 240 per hour, shallower molds up to 300 halves per hour.

Requirements—Design essentials included highest possible production per hour, with speed maintained at predetermined rate at all times, plus uniform quality of output. Definition of the output quality includes the requirement that castings should be within closest possible dimensional tolerances.

The latter stipulation is of increasing importance, as automatic equipment is more widely applied to machining of castings due to limited finish allowances required. It was obvious that to meet these requirements the molding operation would have to be mechanized to a higher degree than heretofore and control would have to be completely automatic.

Old Idea, New Approach—The company faced a similar problem three years ago in connection with production of sand cores. At that time, we concluded the best solution was a multiple-station machine, with operations performed simultaneously at the various stations, all automatically. A design was worked out and the first machine began operating more than two years ago.

It was apparent that operating method incorporated into design of this previous Roto-Core Automatic was also applicable to mold production.

Four-Station Sequence—The machine has four stations, at which major operations required to make a mold are performed automatically. A half-pattern that forms the mold contours is mounted on a platen at each of the four stations. Platens float in the turntable and can be raised at each station to permit operations to be performed.

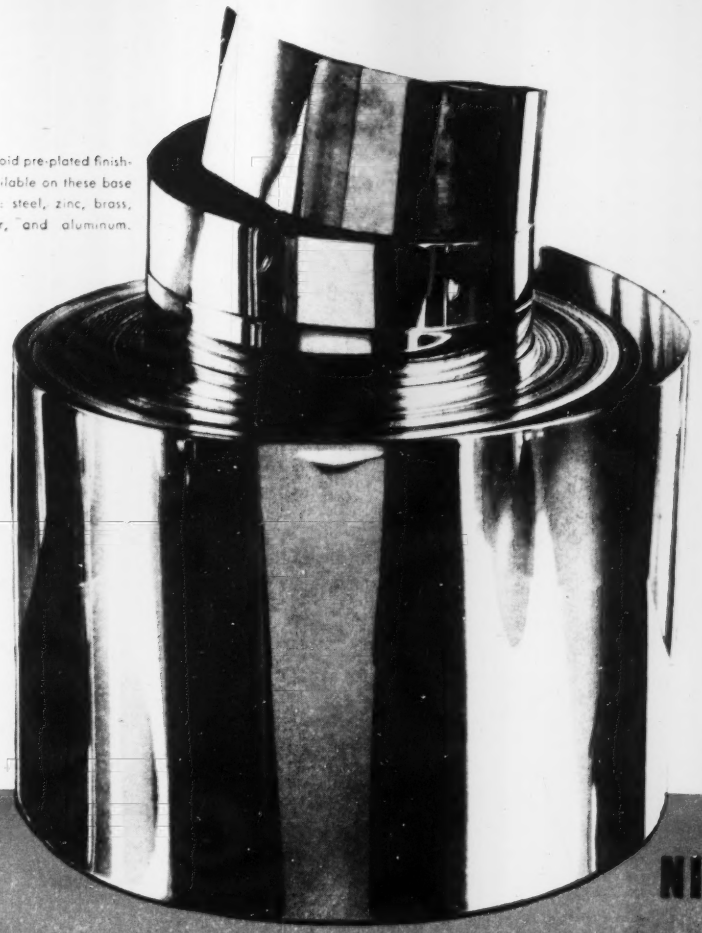
At station No. 2, the flask is transferred automatically on rollers into position beneath the sand supply hopper and directly over the platen. Platen carrying the pattern then is raised by pneumatic pistons until flask is positioned on the pattern, where it is filled with sand.

Simultaneous Operations—At the same time, a flask previously loaded gets a predetermined number of jolts and is squeezed both by pneumatic pistons at station No. 3. During these operations, a third flask, containing a rammed mold, is drawn from the pattern at station No. 4. Elevating mechanism for accomplishing the draw is similar to that used at loading station No. 2. At finish of draw, the completed mold rests on rollers and is discharged by pneumatic pistons.

Operations at stations Nos. 2, 3 and 4 move simultaneously, controlled automatically through a drum switch that actuates solenoid valves. Interlocking limit switches at all points where necessary insure safety in equipment operation.

Nothing Manual—Turntable that carries pattern and flask is actuated by an indexing mechanism which uses a modified Geneva motion. This gains desired high speed with smooth starting and stopping. Under normal conditions, no manual operation is needed in making the mold. Thereby is derived uniformity in quality and quantity of output.

Two of these are used in producing cylinders—one for the cope, the other for the drag. Each of the 80,000-pounders consumes about 120,000 pounds of sand per hour.



Nickeloid pre-plated finishes available on these base metals: steel, zinc, brass, copper, and aluminum.

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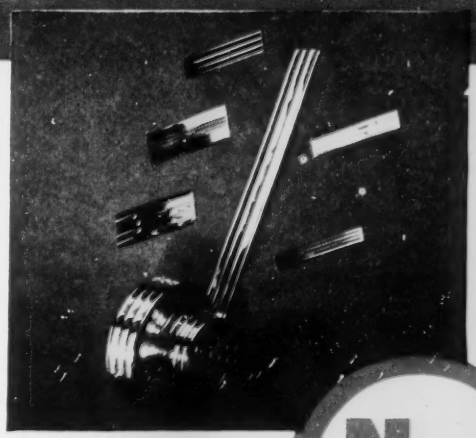

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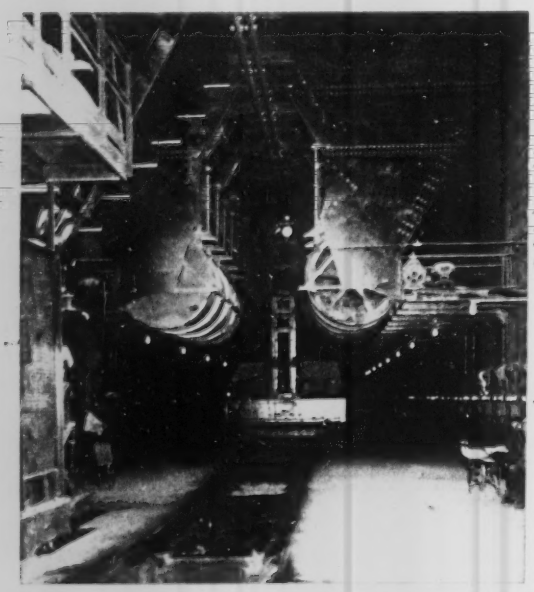
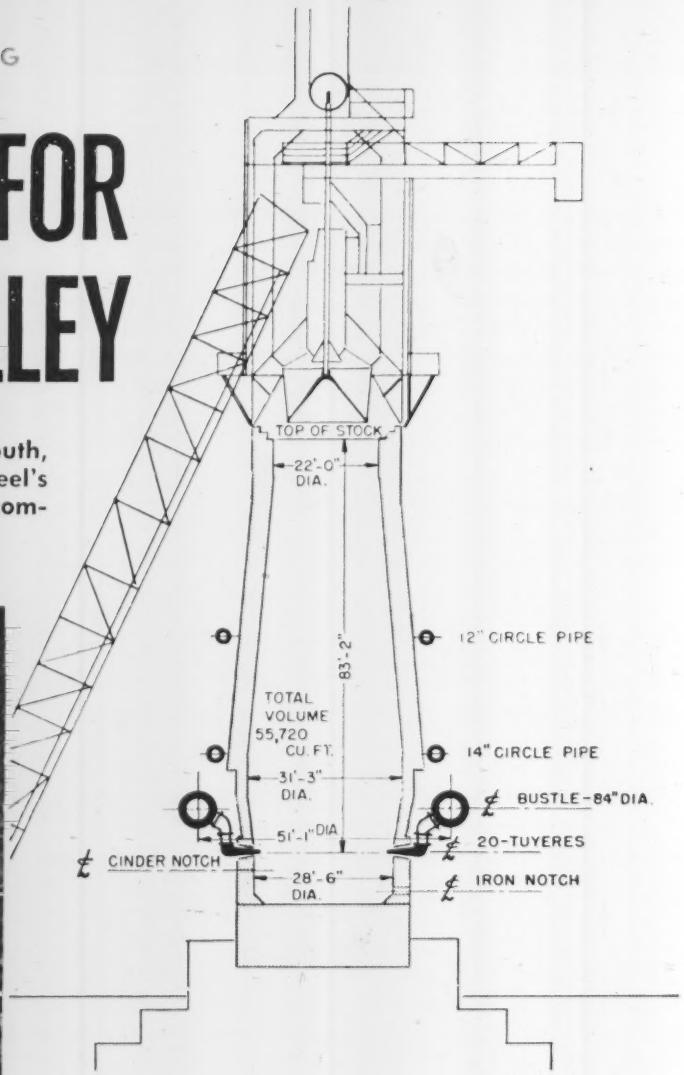
MORE IRON FOR THE OHIO VALLEY

New 1400-ton Louise furnace at Portsmouth, O., adds 500,000 tons to treble Detroit Steel's hot metal capacity. She's just in time for completion of four 250-ton open hearths





Section through Louise furnace shows some of the principal dimensions. Stockhouse is among most modern. Hoover-Mason-type ore drums on the 42 bins fill the scale car. Weighing and dumping operation is interlocked into the charging cycle

OLD SUSIE is taking a well-earned rest on the banks of the Ohio river outside of Portsmouth, O. Her glamorous younger sister is in the steelmaking spotlight. Incidentally both girls are blast furnaces.

Proud as they were with Susie's latest 10-year campaign during which she turned out 2.6 million tons of iron, Detroit Steel officials are prouder still of their brand new 1400-ton furnace that casts iron at twice Susie's rate. Christened Louise, the new furnace incorporates all of the latest design and operation features.

Started in 1948—First spadeful of earth was moved in mid-1951, but actual planning started three years earlier. Based on considerations at that time, the furnace was to have been a 1300-ton producer with a stock line diameter of 21½ feet. No new stoves were to be built nor gas cleaners, and Susie was to be retired pending changes in demand for steel.

Before those plans could be carried out, Portsmouth Steel became a part of Detroit Steel in 1950, and the new management soon put forth plans for a $60 million expansion and modernization program. Furnace plans were enlarged to include new turbo blower capable of delivering 110,000 cfm at 30 psi, three new stoves, gas cleaners and precipitators, and a major addition to the stockhouse and storage yard.

More Tonnage—Furnace itself was enlarged to 1400-ton capacity by extending hearth diameter to 28½ feet and stock line diameter to 22 feet. Production is figured on the basis of about 85,000 cfm wind and a coking rate of 1650 pounds per ton.

When Susie is relined and put back into operation sometime after the first of the year, Detroit's pig iron capacity will be 750,000 tons per year. The four new 250-ton open hearths scheduled for com-

PROGRESS REPORT ON NATIONAL CARBON
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One out of every three blast furnaces in this country is now lined with "National" carbon. With this outstanding acceptance of carbon as a blast furnace refractory, let's take a look at its remarkable performance over the long haul.

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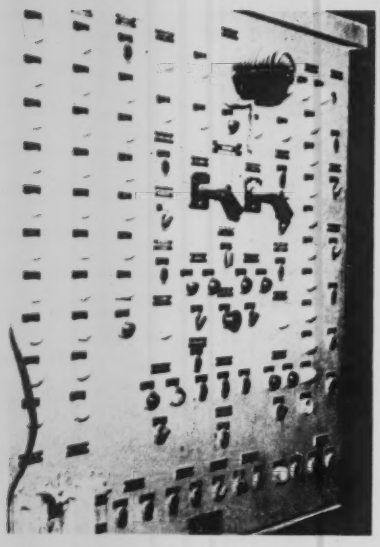


Panel, mounted over skip pockets at scale car level, tells operators how charging is progressing. The cycle can be manually operated from here

pletion at that time will double the company's ingot capacity from 650,000 to 1.3 million tons.

Pushbutton Charging — Louise furnace is equipped with electronic stock charging control system built and installed by General Electric. Once the charging cycle is set on the control panel, it is virtually impossible to incorrectly charge the furnace. A system of interlocks tie in the operation of scale car, coke handling system, skip cars, distributor, large and small bells, stockline recorder rods and stock watering device.

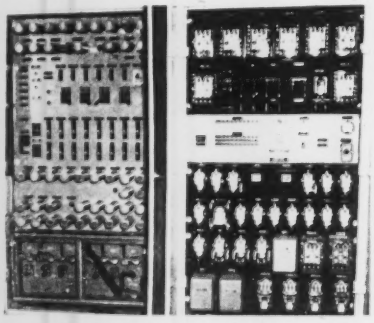
Scale car operators handle only ore and limestone. Coking operation is automatic from hopper to scale to skip pocket; even charging takes place automatically while scale car is preparing ore and limestone charges. Control panel flashes lights to scale car men indicating number of rounds and the progress of the one being charged. Skips have ore capacity of 20 tons and travel at top speed of 680 fpm.

Slag Pits—Furnace has two cinder notches and slag flows into two concrete pits, 82 x 250 feet where water spray cools it. Pits are filled alternately to permit bulldozers and shovels to empty one while the other is being filled. Detroit Steel has leased this operation to a private concern which crushes and sizes the aggregate for later sale.

The big increase in volume of raw materials to be handled has forced Detroit to construct its own car dumper. Fully-loaded 50-ton ore and limestone cars will be lifted and dumped into a hopper at a rate of one car every two minutes. Diesel-driven transfer car will then carry material to stockhouse pockets or dump it into the stock yard.

Cooling—Furnace lining is cooled for a distance of 18 feet above the mantle by seven rows of water-cooled copper plates. The twenty copper tuyeres are also water cooled, and the lining at the bosh and tuyere jacket is protected, respectively, by eight and four rows of water-cooled plates. Hearth jacket is conditioned by water-cooled staves five inches thick.

Vital Statistics—John Mohr and Sons, Chicago, designed, engineered and constructed the furnace with the help of subcontracting personnel and the Detroit Steel engineering department. Total height is



Part of intricate controls for automatic charging drive system. Rows of colored buttons, left panel center, set circuitry for different rounds

238 feet, hearth diameter 28.5 feet. Stockline diameter is 22 feet, and large bell diameter is 16.5 feet. Height from iron notch to top ring is 108 feet.

Furnace has three stoves each 123.5 feet high, 26 feet in diameter and a heating surface of 273,000 square feet. Gas cleaner is 29 feet in diameter x 38 feet high, gas washer is 21 feet in diameter x 63 feet 4 inches barrel height. There are four tile banks with 140,000 cfm capacity.

Two 240-pipe Cottrell precipitators will handle both furnaces with a moisture and dirt removal efficiency of 95 per cent. Stockhouse has capacity of 99,750 cu ft for ore and stone, 22,500 cu ft for coke. Scale car volume is 700 cu ft.

Other improvements figuring into Detroit's $60 million program include these already completed: New hot and cold strip mills, new maintenance center, new diesel locomotives and cranes and 19 miles of additional railroad tracks. Early in the year the four 250-ton open hearths, new rotary soaking pits, and blooming mill will be completed. All construction has taken place over a period of four years without loss of production in existing equipment.

Boring Meets Its Master

PRECISION built hand reaming fixtures have been a significant factor in overcoming production bottlenecks on airborne radar antenna units at Dalmo Victor Co., San Carlos, Calif. These master fixtures, providing complete interchangeability of parts with near zero dimensional limits, have reduced the previous time-consuming operation on jig boring machines by nearly 75 per cent, at 10 per cent of the cost.

Problem in Stability—Designed and developed by the tooling section of the company's parts production plant the fixtures are used for azimuth drive gear housings and other components requiring precision alignment of dowel pin holes, bores and outside diameters.

To meet the extremely close dimensions required to insure interchangeability in final assemblies, construction of the master reaming fixtures presented a problem in fixture stability to assure constant reproduction of dimensions. Meehanite castings are utilized as a supporting foundation for the balance of the fixture assembly.

Eliminate Match Markings

Journal guides and caps, reamer bodies and shanks are fabricated of high carbon steel, rough machined, normalized and carburized. Guides and caps are ground, honed or lapped on all critical surfaces, maintaining extreme concentricity and face squareness.

Besides providing precise alignment and interchangeability of parts, the fixtures eliminate match markings formerly used, hold scrap parts to a minimum and greatly reduce inspection time.

THE BURLINGTON LIARS' CLUB

SPINS A YARN FOR BAKER'S MAGDOLITE

A ROYAL FLUSH

While quail hunting down in Mississippi, a fellow lost sight of his dog, Sherlock, in the brush. And when Sherlock didn't come to whistle, he knew the dog must be on point, so he started down the path looking for him. Suddenly, across an opening ahead of him, flew two quail spaced just right—and he dropped them both. Just as he reloaded, two more came flying by—and he dropped them, too. This procedure was repeated until he had his limit. Then, walking into the brush in the direction from which the quail had come, he found Sherlock. The cagey canine had roaded a covey of quail into a hollow log. There he was, sitting beside the log with his paw over a knothole, letting the quail out a brace at a time!

When it comes to flushing a covey of quail, Sherlock certainly makes the most of the situation. And when it comes to ordering dolomite, why don't you take advantage of a good thing, too? Don't merely order dolomite. Specify BAKER'S MAGDOLITE, the original deadburned dolomite.

BAKER'S MAGDOLITE is a dolomite of superior chemical, physical, and mineralogical composition. It's properly burned grain-size particles assure more uniform ingots, lower fuel costs, and less defective production material.

Next time, order BAKER'S magdolite! It's always 5 ways better: Composition, Preparation, Strength, Economy, and Quality.

JEBCo

PRODUCTS
SINCE 1889

MAKERS OF BAKER'S MAGDOLITE

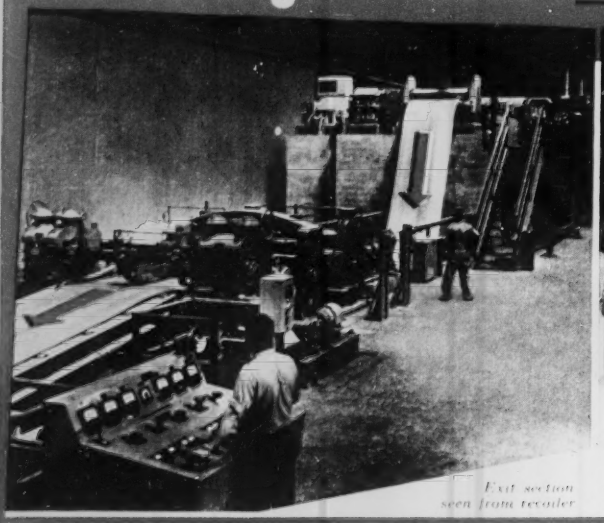
© The J. E. Baker Company

THE J. E. BAKER COMPANY

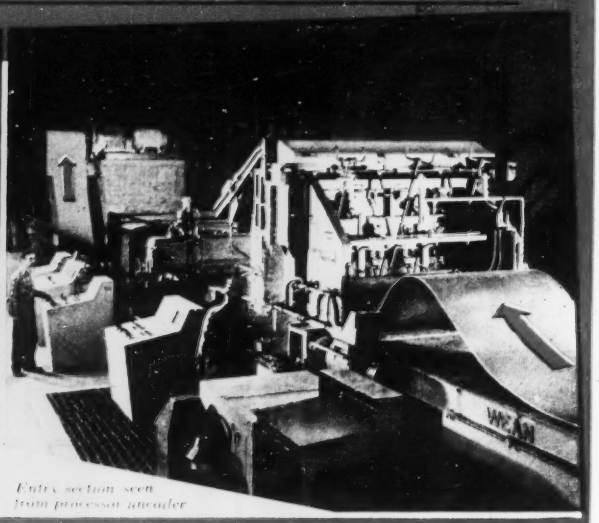
YORK, PENNSYLVANIA

Plants: York, Billmeyer, Pennsylvania—Millersville, Ohio

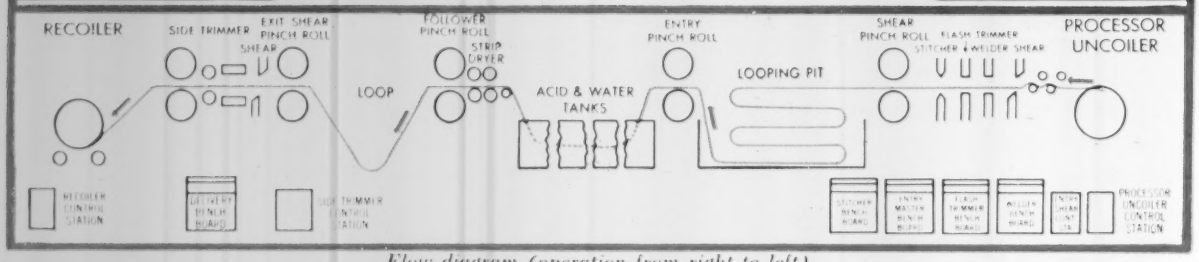
Continuous Pickling Line at Pittsburgh Steel is CLARK Controlled



Exit section seen from recoiler



Entry section seen from processor uncoiler



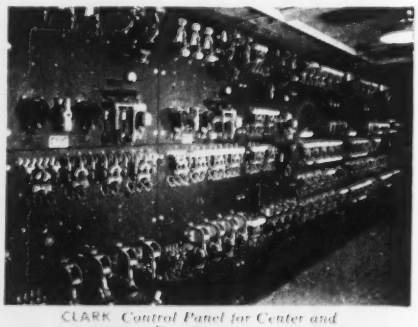
Flow diagram (operation from right to left)

This Wean Engineering Co. continuous pickling line at the Pittsburgh Steel Co.'s Allenport, Pa. mill is powered by 7 DC strip-drive motors and 39 AC auxiliary motors totaling 1409 HP—all efficiently controlled by Clark apparatus.

Designed for a normal operating speed of 500 FPM, this 60 inch combination pickling and side trimming line consists of three sections. The entry section includes the processor uncoiler, shear, welder, flash trimmer, stitcher, and shear pinch roll. The center section includes the entry pinch roll, acid and water tanks, strip dryer and follower pinch roll. The delivery section includes the exit shear pinch roll, shear, side trimmer and recoiler. The control system employs current limit and voltage regulation in all three sections to provide for the most efficient utilization of the available horsepower.

CLARK engineered controls for processing lines are the cumulative result of years of engineering experience. These controls embody the latest circuit designs and devices and are continually being improved to keep pace with production and safety requirements as determined by modern mill practice.

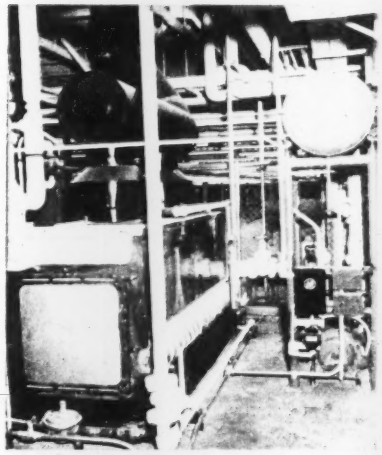
For all types of Processing Lines CLARK engineering "know-how" provides you with dependable, complete control. Consult our nearest District Office for details.



CLARK *Control Panel for Center and Exit Sections*

THE CLARK CONTROLLER CO.

ENGINEERED ELECTRICAL CONTROL • 1146 EAST 152ND STREET, CLEVELAND 10, OHIO



Gas-Propane Boilers

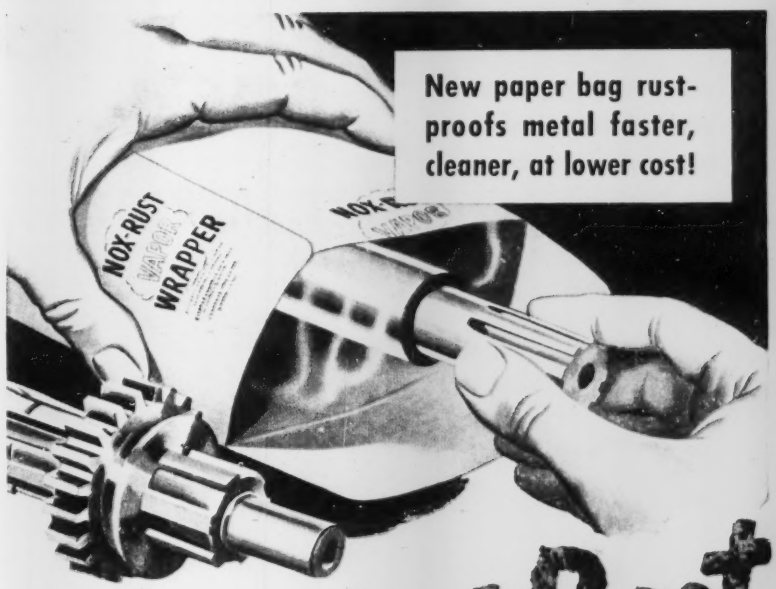
Convair's 40-acre guided missile plant at Pomona, Calif., has 19 gas boilers supplying heat and domestic hot water. The National Radiator Co. boilers each have net rating of 1,212,300 Btu per hour—equivalent to 8080 sq ft of hot water radiation. If gas transmission is interrupted, a propane-air mixture is quickly available

Lighter Export Packing

SEEKING a more economical method of packing for export, Ditto Inc., Chicago, recently switched from heavy wooden cases to lighter, steel-strapped fiberboard cartons for several products in its duplicating equipment line. Now the company reports savings in both packing expenses and transportation costs on these items amount to more than 70 per cent.

Until approximately four years ago, all products shipped by Ditto were packed in heavy wooden cases. They had practically no damage claims. But, they began to feel this was not sufficient reason to warrant the expense of unnecessarily heavy packing. In the opinion of the company's export department, potential savings in packing and transportation expenses would more than offset a few damage claims received as a result of lighter packing.

Standard Method — Their first experiment was the shipping of printing papers in lighter export containers instead of wooden boxes. Ditto tried fiberboard boxes lined with waterproof paper and reinforced with strapping supplied by



Wrap Out Rust

with NOX-RUST Vapor-Wrapper

New Chemically Active paper—in sheets, rolls, bags, envelopes and caseliners—blocks rust in one simple operation.

A prominent piston manufacturer reports Vapor-Wrapper cut packaging costs 75%. Another company saved $15,000 a year packaging precision office machines. Numerous others tell of savings just as dramatic with Vapor-Wrapper rust-preventive paper.

The volatile chemical *within* Vapor-Wrapper paper is an exclusive development of NOX-RUST laboratories. It makes moisture-laden air non-corrosive . . . *without the need for an air-tight package* . . . without deposits forming on the metal during shipment or storage.

Vapor-Wrapper rust-proofs everything from cotter pins to printing presses—cleaner, faster, at lower cost! It delivers products "factory-fresh" . . . ready for instant use. Plan today to cut costs and improve service in your business with NOX-RUST Vapor-Wrapper.

Vapor-Wrapper conforms to Military Specifications, MIL-P-3420. Packaging Materials, Volatile Corrosion Inhibitor Treated.

NOX-RUST VAPOR WRAPPER

NOX-RUST Chemical Corporation
333 North Michigan Ave.
Chicago 1, Illinois
Offices in Principal Cities

- Volatile Corrosion Inhibitors
- Rust Preventive Compounds
- Metal Cleaners
- Automobile Undercoatings
- Sound Deadeners

Let a NOX-RUST "Corrosion Specialist" show you what this amazing paper can do in your plant!

Clip this coupon to your letterhead—Mail Today!

NOX-RUST Chemical Corporation
Dept. J3, 333 N. Michigan Ave.
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☐ Please send booklet on Vapor-Wrapper the paper that wrapsout rust.
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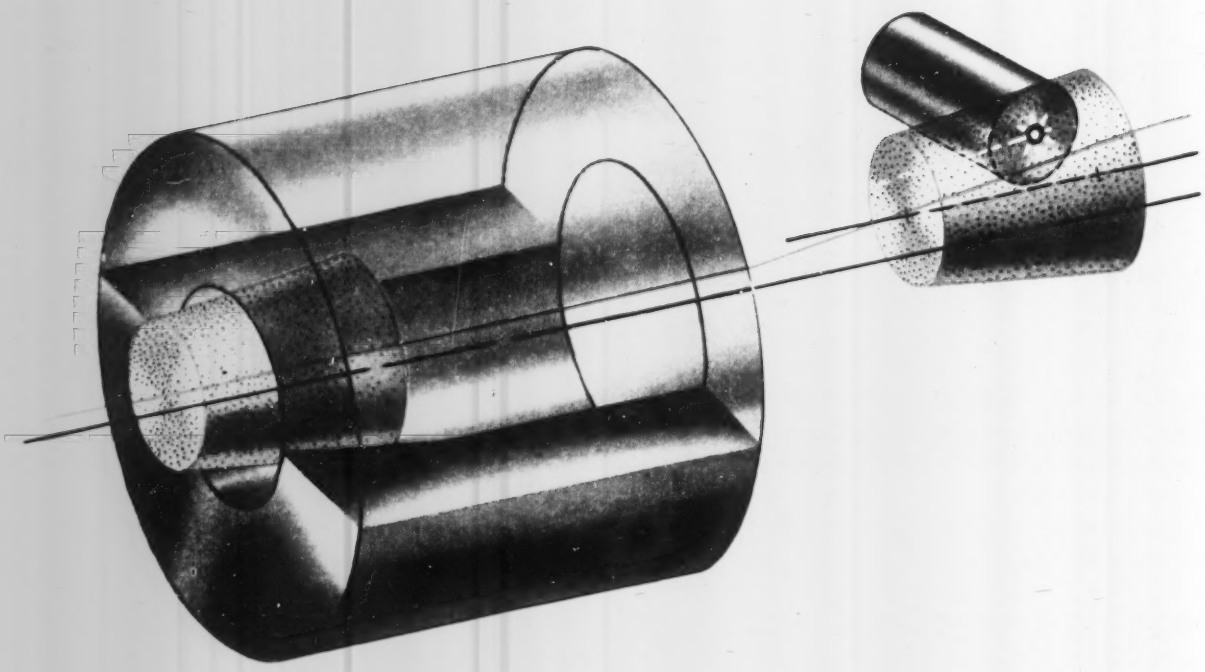
Name _____ Title _____
Firm Name _____
Address _____
City _____ Zone _____ State _____

alignment

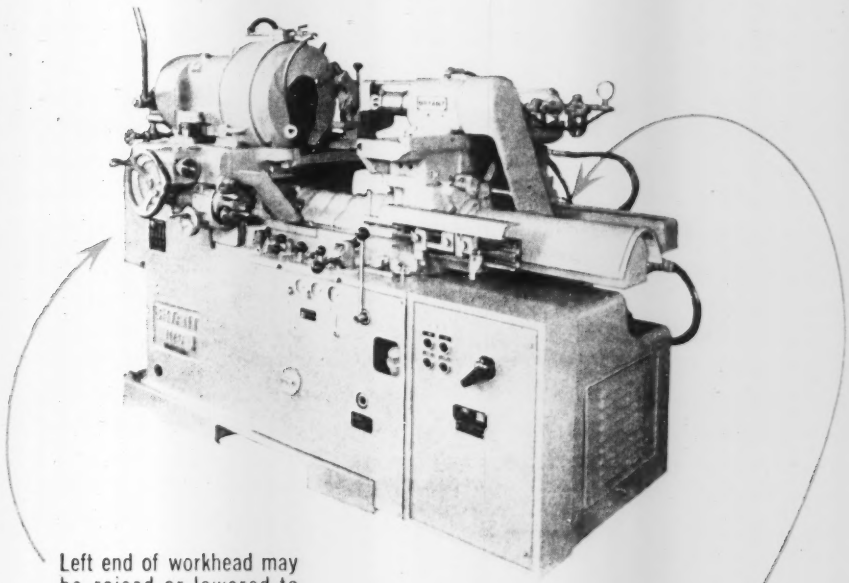
for better internal grinding



IT is common assumption in internal grinding that once the grinding wheel passes the diamond, all errors will be eliminated and the wheel will be a perfect cylinder. It is also assumed that this grinding wheel can produce a straight hole. These two assumptions are true if the wheel path is a straight line parallel with the axis of the wheel as it passes the diamond and traverses the work.

In the illustration, the wheel slides are badly worn and the wheel path is not a straight line. The distortion in the ways causes the wheel to move gradually away from the diamond and the wheel is dressed to a taper as it passes the diamond. Then, as the tapered wheel traverses the work, it will grind only on its large diameter. At the point of reversal the tapered form will be transferred to the work, If the traverse stroke is lengthened, the tapered section will be moved to the new point of reversal. In addition, wheel wear will be excessive, finish will be poor, feed lines may be visible.

Available information advises simply turning the workhead or changing the length of traverse to correct taper. In the case illustrated, neither turning the workhead nor changing the length of traverse will produce a straight hole. The only possible remedy is to straighten the wheel slide ways which will, in turn, straighten the wheel path. The wheel will then contact the work properly, producing correct geometry of the hole, longer wheel life and better finish.



Left end of workhead may be raised or lowered to bring its axis into a plane parallel with wheelslide bar.

Rear of wheelslide may be adjusted to insure straight line motion of the wheel.

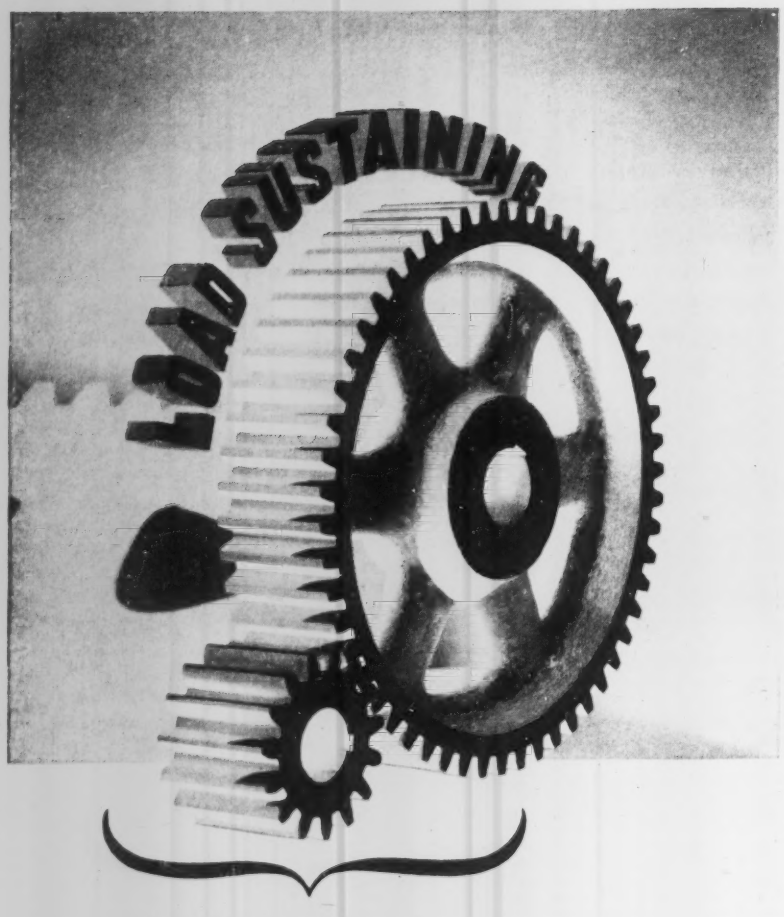
This machine is for general purpose hole grinding. It has convenient centralized controls and all features necessary to handle a variety of work with minimum time and effort needed for changing jobs. For stable 3-point support, the wheel spindle is mounted on a cylindrical bar which is supported on 2 cylindrical bearings. The rear of the slide is supported on a hardened and ground guide plate. Workhead may be swiveled for grinding tapers up to 90° included angle. Provision is made for mounting a face grinding spindle in addition to the hole grinding spindle. The No. 1116 will swing 16″ with 12″ max. hole depth. Write for folder.

Write for "Alignment" booklet which gives complete details on this interesting subject. Also ask for booking form on new sound, color movie — free showings arranged for engineering groups.

Bryant Chucking Grinder Company

Springfield, Vermont, U. S. A.

Internal Grinders • Internal & External Thread Gages • Granite Surface Plates • Boring Machines



H & S gears are

EXTRA HEAVY FOR THE PITCH

● Built of the finest materials by skilled craftsmen, Horsburgh & Scott gears are accurate and husky. "Steel muscled" for hard work... rims, arms and hubs are extra heavy for the pitch. Outside diameter, faces and ends of hubs are smooth finished to the correct size. Pitch line is absolutely concentric with the bore. Teeth are accurately cut with the correct amount of backlash for smooth operation. Bores and keyseats are accurately and smoothly finished. They are built to stand the "gaff".

THE HORSBURGH & SCOTT CO.

GEARS AND SPEED REDUCERS

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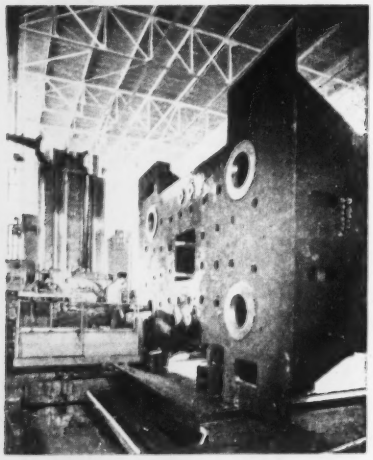
Send note on Company Letterhead for 488-Page Catalog 49



Try This In Your Garage

This mammoth steel casting being machined on a 8-inch bar horizontal boring mill is commonplace at Lake Erie Engineering Corp.'s Buffalo plant. Unit weighs 168,000 pounds, is 220 inches long, 66 inches deep and towers 192 inches. It will become the bottom platen for 5000-ton laboratory press

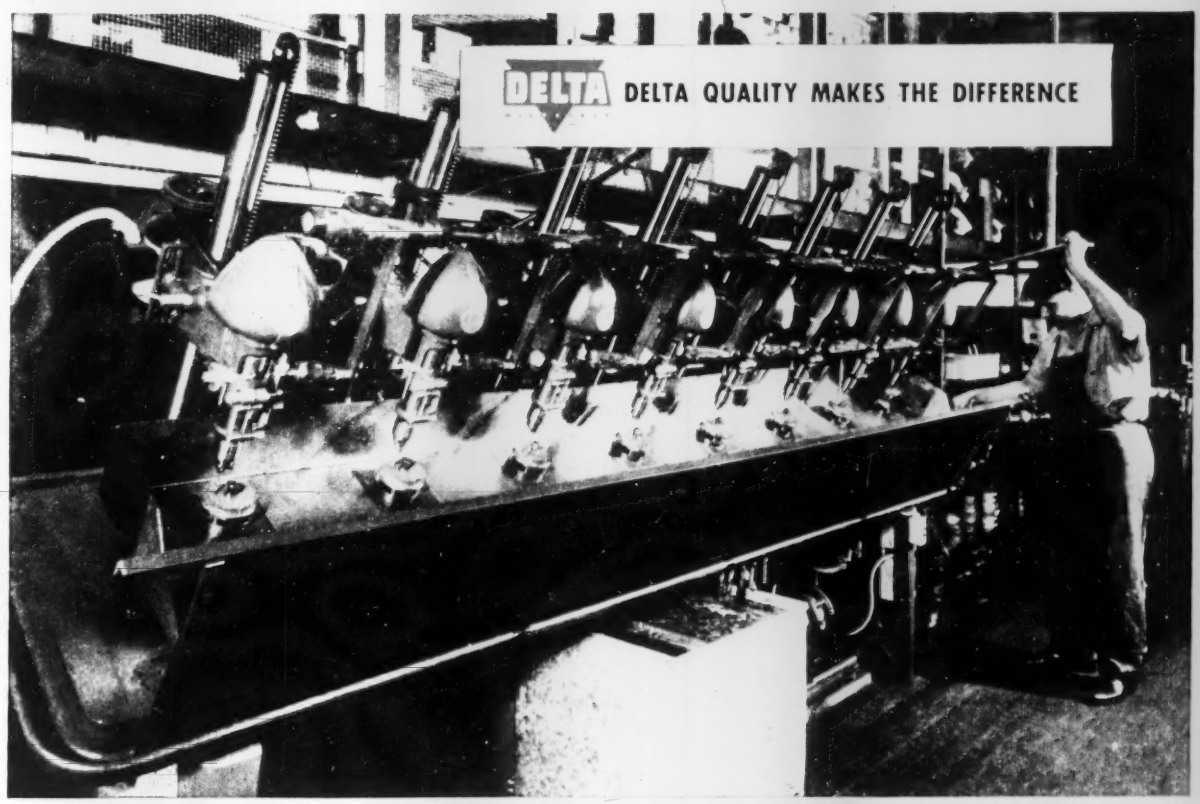
Acme Steel Co. Success meant it was adopted immediately as the standard method for this commodity. As a result, packing expenses were cut up to 75 per cent, transportation cost on the lighter containers up to 80 per cent.

The company next changed from heavy wooden boxes to five-ply laminated fiberboard boxes reinforced with steel strapping for overseas shipment of duplicating rolls. The company's export department reports this method has resulted in the saving of thousands of dollars annually.

No Damage Claims—Now, practically all Ditto products—the main exception being their duplicating machines—are packed and shipped in steel strapped fiberboard containers.

After four year's experience with its new method of export packing, the firm reports it has not had one serious damage claim due to lighter export packing.

Convinced they can achieve these lower packing costs and even greater transportation savings by abandoning the super-strong containers, Ditto is now making tests to see what can be done about extending the technique to other products, including the duplicators.



New "slant" on DELTA Drill Presses boosts output at Atlantic Service Co.

Easier cleaning, better lubricant flow, reduced operator fatigue are extra benefits for Brooklyn shop.

A gang set-up of eight Delta 14" Drill Presses mounted at an angle of about 30° and operated by one man, boosted output and made a healthy cut in costs for Atlantic Service Co., Brooklyn, N.Y. This production speeding hook-up was possible because versatile Delta Drill Presses *operate in any position:* upside down, sideways, at any angle.

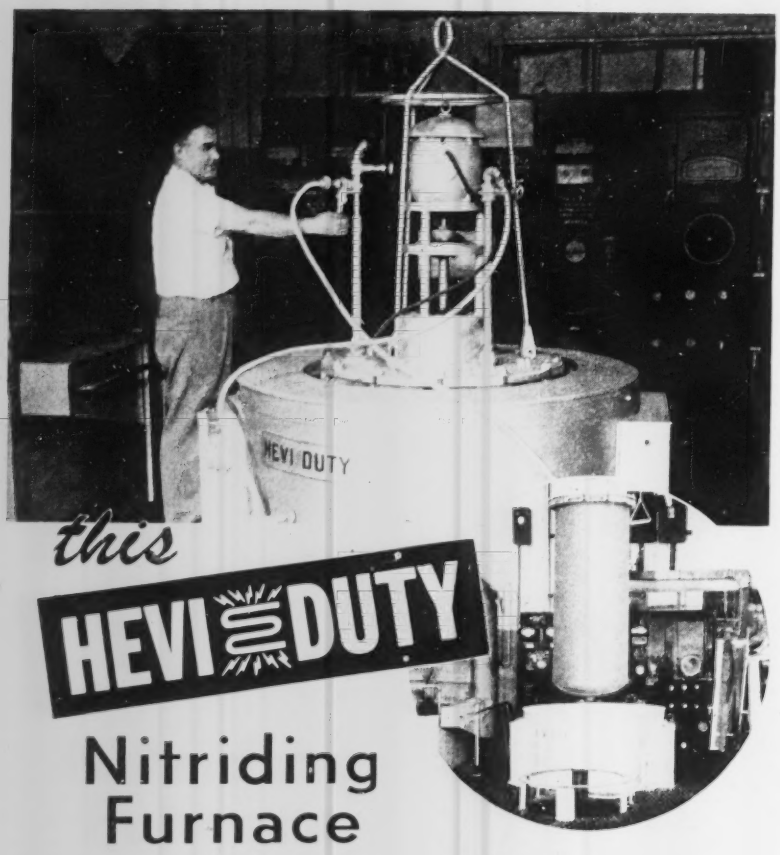
All spindles in Atlantic's set-up are connected to a master shaft and move simultaneously. Parts to be drilled are held on adjustable jigs. As many as 100 holes are drilled in each piece.

The tilted table is easy to keep clean, improves lubricant flow, makes the operator's job much easier — all of which contribute to a competitively low production cost.

Why not work out your own money-saving slant . . . as thousands of resourceful shop men are doing! Your Delta dealer can help you — he's listed in your Classified Telephone Directory under "Machinery" or "Tools". Write for the latest Delta catalog. Delta Power Tool Division, Rockwell Manufacturing Co., 633 N. Lexington Avenue, Pittsburgh 8, Pa.

DELTA QUALITY POWER TOOLS

Another Product by **Rockwell**



this

HEVI DUTY

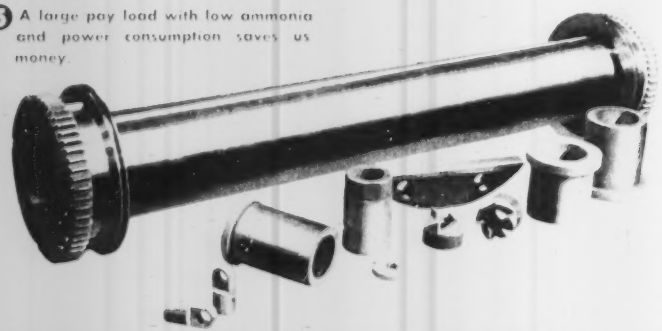
Nitriding Furnace

GIVES US WHAT WE WANT...

Paul C. Farren, Chief Metallurgist at Hartford Machine Screw Company, says, "I like this Hevi Duty Vertical Retort Nitriding Furnace because

1. We can nitride all types of steel including stainless.
2. This Hevi Duty Furnace is adaptable to the Floe process of Nitriding.
3. We get uniformity throughout the entire load.
4. The parts come out clean and treated to very close tolerances.
5. A large pay load with low ammonia and power consumption saves us money.
6. This furnace stands up under continuous use.
7. Control is easy, giving us exacting case depths in each heat and uniformity from heat to heat."

These and the many other advantages built into Hevi Duty Nitriding Furnaces can benefit you. Write for more information today — Bulletin HD-646-R.



HEVI DUTY ELECTRIC COMPANY

MILWAUKEE 1, WISCONSIN

Heat Treating Furnaces... Electric Exclusively

Dry Type Transformers *Constant Current Regulators*

Putting Ceiling on Noise

Acoustical system using light aluminum panels and fibrous glass is tops in noise control

METHOD for effectively reducing noise in large industrial areas, through the combined use of aluminum panels and glass fiber insulation, has been introduced, and the system now is being distributed nationally.

Perforated, corrugated aluminum panels are suspended on aluminum angles to form a ceiling; then, the glass fiber insulation either is placed directly on top of the panels or is separated from the panels and attached above them to existing ceiling, to leave space for ventilating ductwork or other installations. System has been tested by Riverbank Acoustical Laboratories in Geneva, Ill., and by a number of industrial installations, one of which, an aircraft plant, is installing 300,000 sq ft of the material.

The technique was introduced by Reynolds Metals Co., and is being distributed through Elof Hansson Inc., New York.

Easy on Eyes, Too—Combination of aluminum panels and glass fiber insulation effectively absorbs sound at all frequencies and provides a fire-resistant acoustical system of high efficiency and pleasing modern design.

System's simplicity makes possible significant labor savings. It can readily be installed in old buildings, covering up utilities, fixtures, and pipes. The lightweight panels and blanket, weighing less than one-half pound per square foot, can quickly be pushed up or removed from their supports to provide unlimited access to utilities. If necessary, the ceiling also can be inexpensively changed to conform to a new floor plan.

In addition to providing a noise-reduction coefficient of up to 0.90, one of the highest on record for any acoustical material, the glass fiber blanket is non-combustible, moisture-repellent, and automatically provides efficient thermal insulation.

The system can be installed either by suspending the rustproof, nonstaining panels from the roof, framing or truss work by wires or

metal straps, or by direct attachment to the existing ceiling. When the glass fiber blanket is separated from the aluminum panels, the ceiling is adaptable to any air conditioning system.

The aluminum panels are of .024-inch thickness, and are available in six or eight-foot lengths with 33¾-inch width to give net coverage of 32 inches. The six-foot panels provide 16 square feet nominal net coverage and the eight-foot panels 21⅓ square feet coverage.

Both panels and extrusions are available in either natural aluminum or baked enamel white finish.

Cross Announces Transfer-matic

A special machine tool Transfer-matic type for drilling, boring and milling intake manifolds has been announced by Cross Company, Detroit 7, Michigan.

Manifolds are processed at the rate of 218 per hour at 100 per cent efficiency. The machine, which has seven stations including loading and unloading, performs 54 operations 22 drilling, eight chamfering, two reaming, 12 tapping, eight boring, and two milling. Two parts are machined at one time at each station.

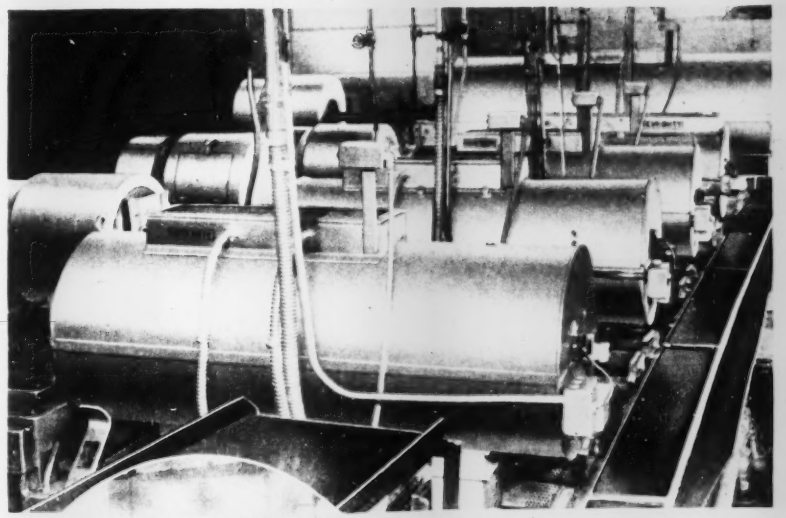
Palletized work holding fixtures are used to carry irregularly shaped manifolds automatically from station to station. Power wrenches are used for operating the work holding fixtures automatically.

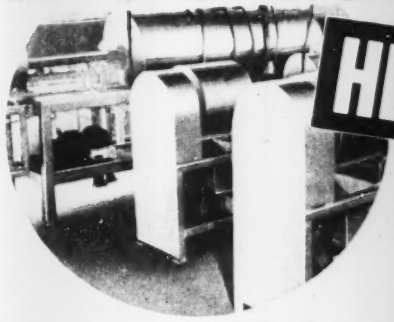
Vacuum Process Group Formed

The recently established Committee on Vacuum Techniques Inc. is a non-profit Massachusetts Corporation which embraces membership from industries employing vacuum processes, universities engaged in high vacuum research, and manufacturers of vacuum equipment and components.

The committee plans to sponsor a High Vacuum Symposium in June, 1954, at Asbury Park, New Jersey.

In addition, the committee on Vacuum Techniques, Box 1282, Boston 9, Massachusetts, is soliciting membership application from individuals and companies involved in high vacuum technology.





HEVI DUTY

SHAKER HEARTH FURNACES

are saving MONEY...TIME...MATERIAL...

Oregon Saw Chain Corporation, the world's largest producer of top quality saw chain, uses five Hevi Duty Shaker Hearth Furnaces to harden saw teeth. They say, "We have solved a heat treating problem and have paid for the furnaces from the savings."

MONEY

The low cost, economical operation of the continuous production type Shaker Hearth Furnace has cut heat treating costs in half. Little maintenance means additional savings.

TIME

Now one man treats more than a ton of small parts every eight hours. Less handling of the parts is required with a steady flow to the production lines.

MATERIAL

The Hevi Duty Shaker Hearth Furnace treats each part individually. They pass through the furnace in a natural gas atmosphere and fall directly into the quench. This method hardens the saw teeth to 63-65 Rockwell with no rejects due to distortion and scale.

For more information about this modern production tool, write for Bulletin 850.

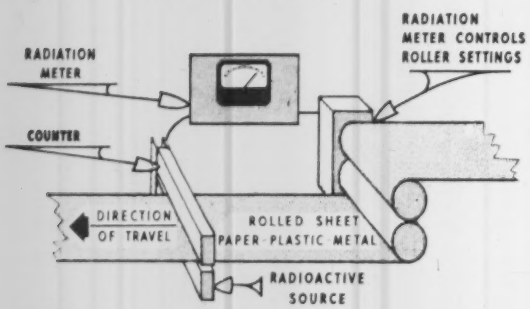
HEVI DUTY ELECTRIC COMPANY

MILWAUKEE 1, WISCONSIN

Heat Treating Furnaces... Electric Exclusively

Dry Type Transformers *Constant Current Regulators*

RADIOACTIVE SOURCE
FOR GAGING THICKNESS



ADVANTAGES:

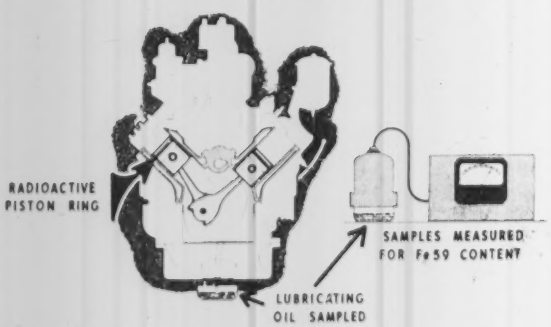
1 - RADIATION SOURCE SELECTED TO SUIT MATERIAL
2 - NO CONTACT - NO TEARING - NO MARKING MATERIAL
3 - RAPID AND RELIABLE

Utility of Isotopes in Metallurgy

Tracer elements prove to be valuable shortcut in quantitative analysis of oxygen in such metals as iron, steel and copper. Other useful roles include gaging metal thickness

By HENRY C. BOYNTON
and
A. D. KIRSHENBAUM
Research Institute of Temple University
Philadelphia

RADIOACTIVE IRON - Fe 59
FOR FRICTION AND LUBRICATION STUDIES



ADVANTAGES:

1 - TRANSFER OF METAL MEASURED TO $\frac{1}{100,000}$ OUNCE
2 - OIL SAMPLED DURING OPERATION OF MOTOR
3 - DEVELOPED FILM SHOWS LOCATION OF WEAR

SPAN of a few short years bridges the time it has taken isotopes to emerge from the narrow boundaries of a scientific curiosity into the broad field of practical metallurgy.

It is estimated that the manufacture of instruments for the detection of radiation alone was a $20 million business in 1952. Far back as December, 1950, Atomic Energy Commission reported isotopes were being used in 939 departments of 485 institutions in 47 states and territories.

Applications range from quantitative analysis of oxygen in such materials as iron, steel and copper to gaging the thickness of metal sheets as they are being rolled.

What They Are—Isotope may be defined as two or more forms of an element which have the same atomic number but different atomic weights. They may be either stable or radioactive.

Isotopes of carbon, for example, all have 6 as their atomic number, but their atomic weights are 11, 12, 13 and 14. Currently, it is generally accepted that all known elements, formerly supposed to be entities, are really mixtures of two or more isotopes of various stabilities.

Many isotopes, though stable naturally, may be made radioactive by irradiation. These are the radiotropes that are so useful in metallurgical practice. Example is

C^{14}, which when mixed with stable C^{12} even in small amounts, behaves like an indicator in volumetric chemical analysis. Indicator or tracer will react chemically as if the entire mixture were C^{12}.

Activity — Radioactive isotopes are unstable and have different half lives. Half life of C^{11} is 20 minutes as compared with C^{14}, which has a half life of 5700 years. Latter, then, is only slightly unstable.

Half-life is related to the emission of energy or radioactivity, and it is generally true that the shorter the half life the greater the intensity of radiation and vice versa. C^{11}, for example, is unsuitable for solving common metallurgical problems, but C^{14}, on the other hand, insures ample time for desired experimental work. Sensitivity of isotopic methods using C^{14} has been stated to be 1 million times that of ordinary chemical methods.

Emission rays of radioactive isotopes may be measured by Geiger-Muller counters, electroscopes (ionization chambers) and photographic plates (autoradiography).

Autoradiography—This is the simplest method for using isotopes in metallurgical work. Suitable film or plate may be employed (x-ray films are generally used). Radioactive sample is placed in intimate contact with the film or plate and exposed for the proper length of time. Latent image is then developed and fixed in the conventional photographic procedure.

Process has been used to determine absorption and depth of carburization of SAE 1020 steel, for example. Briefly, it involved heating the sample at 1700° F in a mixture of C^{14} and C^{12} in a closed container. Technique resembled pack carburizing. In this instance, autoradiography proved more sensitive than the metallographic routine of polishing, etching and examining under a microscope to determine depth of carburization.

Oxygen Determination—In open-hearth practice, operators must keep oxygen at an average of about 0.05 to 0.06 per cent to insure good hot and cold rolling properties, wire drawing ductility and high impact resistance. Separation of from 0.01 to 0.05 per cent of oxygen from the iron and carbon in steel is a delicate and painstaking operation.

Isotopic method for rapid, accurate determination of oxygen in steel or any metal or oxide has been developed by the Research Institute of Temple University. O^{18}, researchers found, can be used to determine the oxygen content of iron, steel, copper, titanium, zirconium, chromium, graphite and iron and copper oxides.

Procedure—Known weight of a substance is mixed with a known weight of metal or oxide containing a given weight of oxygen of known O^{18} concentration. Mixture is heated 1 to 2 hours to a temperature above its melting point with graphite in a graphite boat — platinum, molybdenum or any other oxygen-free tube may be used. All the oxygen atoms then exchange statistically with the other oxygen-containing compounds, such as metal oxides, CO, CO_2, etc.

USES OF RADIOISOTOPES AS TRACER ELEMENTS

1. Determination of sulphur in coke.
2. Quantitative analysis of oxygen in iron, steel, copper, etc.
3. Measuring frictional wear.
4. Finding solid diffusion of two or more metals.
5. Process metallurgy, such as flotation.
6. Study of crystal growth.
7. To determine whether one atom substitutes for or joins with another in material crystallography.
8. Examination of carbon in carburized steels by autoradiography.

USES OF RADIOISOTOPES AS SOURCES OF RADIATION

1. Location of defects in steel and cast iron by radiography.
2. Industrial gages:
   - A. Thickness gages for rolling operations.
   - B. Liquid level gages, such as molten iron in cupola.
   - C. Density meters.
   - D. Vapor pressure determination.
3. By mixing, to follow flow of any liquid in pipe lines, when changes in type of liquid are made.
4. To determine hard to locate leaks in pipe lines.

As the ratio of the O^{18} isotope to O^{16} in all these oxygen-containing compounds is identical, final ratio of O^{18}/O^{16} may be determined with high precision in an isotopic mass spectrometer.

Method has three important advantages: 1. Results may be obtained in about 3 hours, 2. Accuracy is better than older methods for determination of oxygen in iron, steel, titanium and zirconium and 3. Quantitative removal of all oxygen is not necessary.

Gaging—One of the more spectacular uses of isotopes involves the gaging of metal thickness without the gage being in actual contact with the sample. Such a gage, with proper mechanical and electronic devices, may be used to measure thickness of films of liquids, coatings on metals or alloys and moving plastic or metal strip during hot or cold rolling.

Most radioactive thickness gages use Sr^{90}, which emits beta rays and has a half life of about 30 years.

The principle involved uses the change in intensity of a beam of radiation from a fixed source. Radiation absorption is proportional to the thickness of the article to be measured. If Sr^{90} is placed on one side of the sheet or strip and a detector on the opposite side, rays may be counted by an ionization chamber or a suitable Geiger counter. Radiation meter may be set to indicate or record thickness or even control roll settings.

Thin and Thick—C^{14}, because of its low-energy, beta-ray emission, is suitable for gaging extremely thin materials, such as paper, plastic or the thinnest of metal strip. If thick, dense objects are to be gaged, C^{60}, which has a strong emission of gamma rays, is used.

Advantages of radioactive thickness gages over mechanical types: 1. Actual contact is not needed. Thus product is not damaged by marking, 2. New gage is faster and more sensitive and reliable than older types and 3. Gages can be used on moving materials running at high speed, eliminating the need for stopping or cutting.

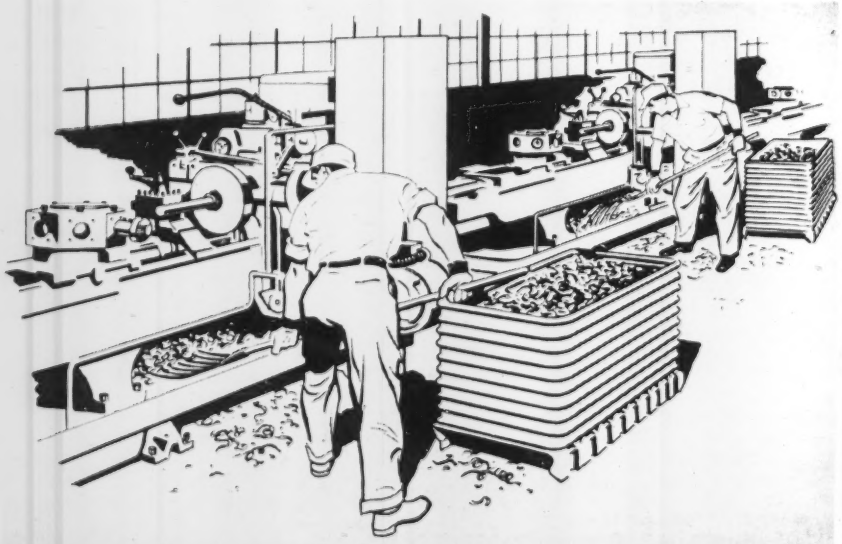
Wear—Tracers are invaluable in the estimation of wear of moving parts, particularly pistons and piston rings in internal combustion engines. At the same time, effect of certain lubricants in decreasing wear may be studied and photographed.

Piston ring is radioactivated in a pile to Fe^{59} and installed in a test cylinder. Samples of the lubricating oil are examined periodically, and after the test, photographic film is placed in contact with the cylinder wall to produce an autoradiograph of the iron transferred from the piston ring to the cylinder.

Small amounts of wear, as little as 1/100,000 of an ounce, can be determined by measuring the amount of radioactive iron particles carried away by the lubricating oil. In fact, exact site of wear may be located by the autoradiograph.

Since this type of study approximates actual services, designs may be altered and improved to eliminate hitherto unknown sources of premature or excessive abrasion of the specimen or any other vital part of an engine.

MAY-FRAN

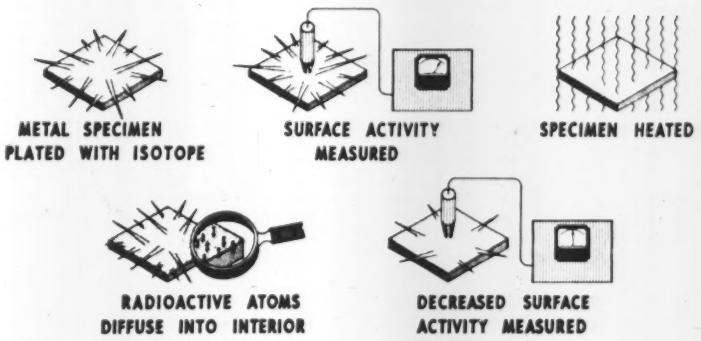


ENGINEERED SCRAP HANDLING

ELIMINATES SHUT-DOWNS

Remove scrap automatically and continuously . . . speed up production . . . with a MAY-FRAN automatic handling system. MAY-FRAN CHIP-TOTES remove chips, turnings and borings from operating machine tools . . . eliminate down-time for manual scrap removal. MAY-FRAN hinged steel belt conveyors then transmit scrap to disposal point or through shearing and baling processes.

RADIOACTIVE ISOTOPES
FOR STUDYING SOLID DIFFUSION



ADVANTAGES:

1 - GIVES ACCURATE MEASURE OF RATE AND AMOUNT OF DIFFUSION

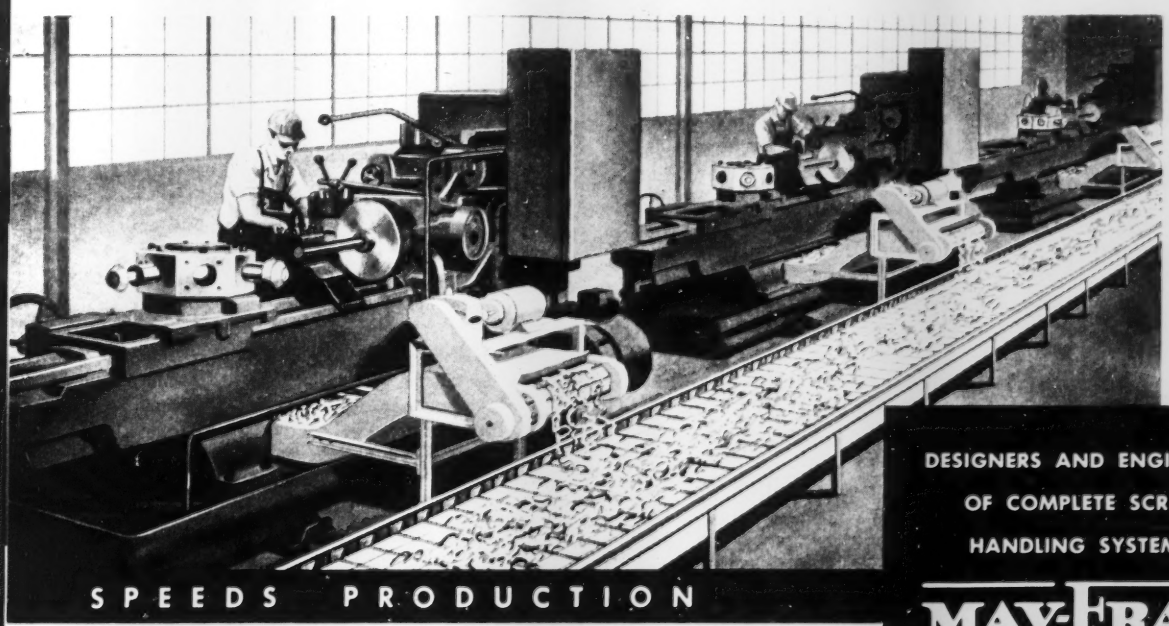
2 - QUICKER AND MORE RELIABLE THAN OTHER METHODS

3 - ONLY METHOD SPECIFIC ENOUGH TO MEASURE SELF-DIFFUSION

Diffusion—Observation of self-diffusion can be made only with isotopes. Much time and labor is saved by using them instead of resorting to analytical methods.

Co^{60} plated on a strip of metallic cobalt has been used to determine diffusion rates, and extremely small amounts of Sb^{124} have been used in germanium to determine distribution of former. Uniform distribution of Sb (antimony) is vitally important in producing the desired electrical properties of germanium.

Guide—All precautions should be followed meticulously in the handling of isotopes. For those without previous experience in the field, good pamphlet on the subject is the U. S. Bureau of Standards handbook No. 42 (Sept., 1946). Its title: "Safe Handling of Radioactive Isotopes."



DESIGNERS AND ENGINEERS OF COMPLETE SCRAP HANDLING SYSTEMS

MAY-FRAN ENGINEERING, INC.

1725 CLARKSTONE RD.

Cleveland 12, Ohio

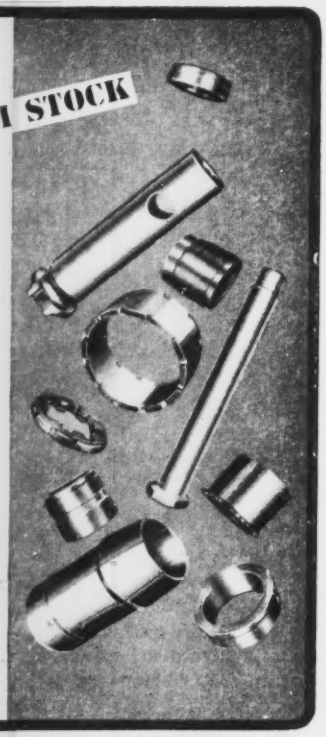
Mass produced parts (heavy or abrasive) can be handled through heat treating, machining, inspection and other operations with MAY-FRAN conveyors. Press scrap systems can be made completely automatic. MAY-FRAN engineered handling systems assure outstanding speed and jam-free efficiency with maximum service life. Write today for complete details.

MECHANICAL TUBING . . . . FROM STOCK

Murray warehouse stocks of cold-drawn and hot-finished mechanical tubing — in carbon and stainless steels — contain a complete range of sizes and wall thicknesses for prompt delivery. Hundreds of tube users repeatedly rely on Murray for dependable tubing service — in quantities to meet their production schedules.

When in need of mechanical tubing — 1/8- to 12-inch O.D. from stock — call a Murray warehouse first and be sure of quick and dependable tubing service.

WRITE FOR CURRENT STOCK BULLETIN

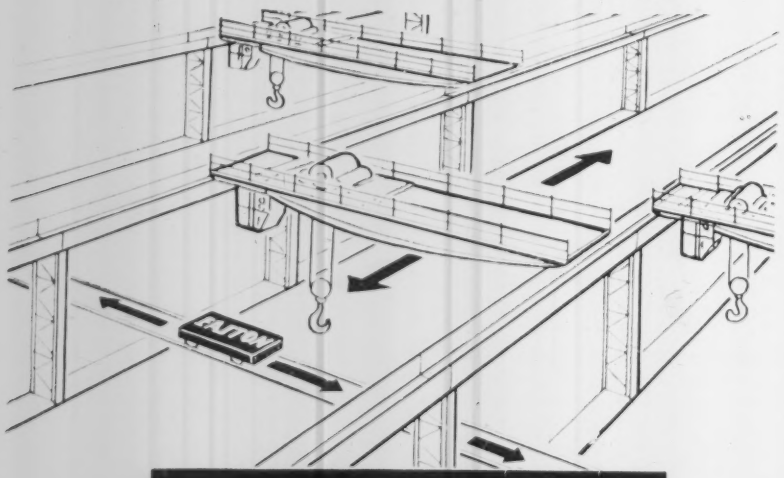


A B MURRAY CO INC.
ESTABLISHED 1865
ELIZABETH, N. J. McKEESPORT, PA.

Other Murray products include boiler and pressure tubes, stainless steel pipe and fittings, IPS pressure tubing, seamless and welded pipe, JIC hydraulic tubing, carbon steel welding fittings and all types of tube fabricating to order.

Cross-Bay Transfer

Automatic motor-driven transfer cars provide a universal handling system in modern parallel bay plants now served by overhead cranes. Also for transfer between plant buildings.



EASTON

A 1041

EASTON CAR & CONSTRUCTION COMPANY • EASTON, PA. • NEW YORK • PHILADELPHIA • PITTSBURGH

Magnetic Tape Machining

Easily-recorded and stored tape reproduces self-reinforced skin structures at twice old speed

RECORD-PLAYBACK control which directs a machine or process cycle from information stored on a magnetic tape is being built by the General Electric Co.'s Specialty Control department for Giddings and Lewis Machine Tool Co., Fond du Lac, Wis.

Automatic control, in development at G.E. for five years, is expected to double the production speed of a milling machine that manufactures self - reinforced "skin" structures for jet aircraft, according to Giddings and Lewis engineers.

Records Motions — The industrial-type multiple-channel tape recorder used in the control is similar to equipment employed in the entertainment and broadcasting fields, except that it records motion instead of sound. It will serve as a magnetic memory for the machine on which it is installed.

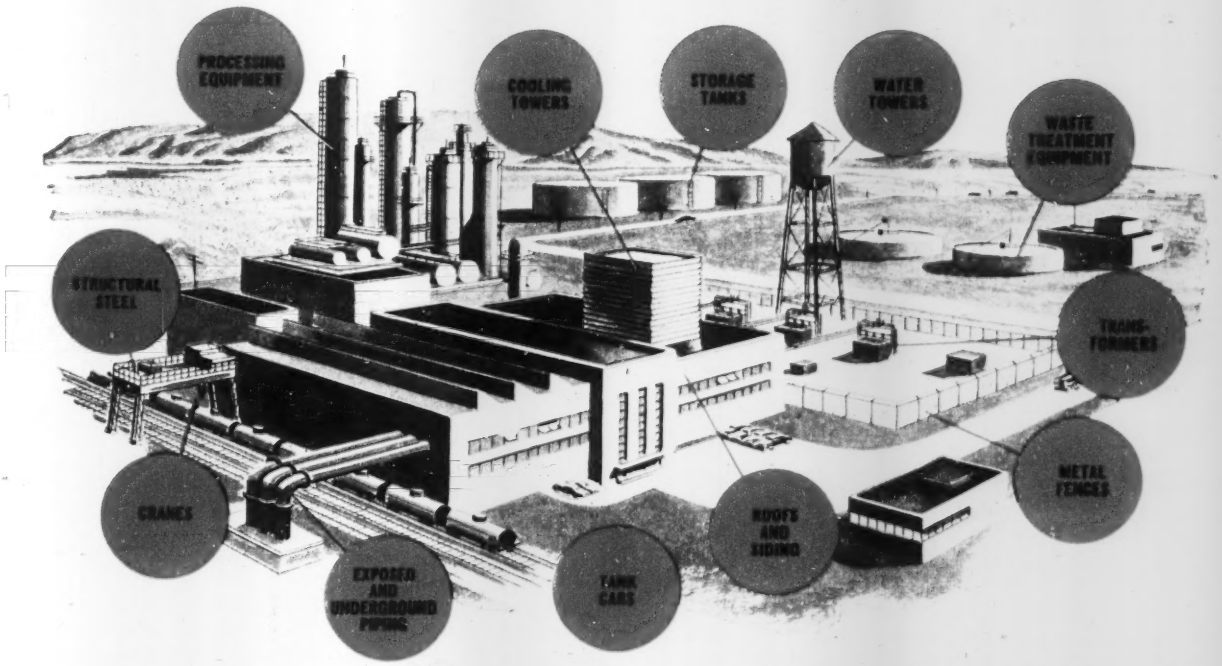
In operation, a skilled machinist or tracer control runs the machine through a series of motions to produce the first piece of work. These motions are translated into electrical signals by means of selsyns and are recorded on the magnetic tape through an electronic circuit. Non-productive motions such as tool setting, gaging, template changing and stop settings are not recorded.

Tapes on File—When the tape is played back through the machine it automatically duplicates the machine's original motions and produces a part identical to the one made while recording. Repeat orders can be produced economically merely by taking the specified tape recording from a file and inserting it into the control.

Research studies are now being conducted by Giddings and Lewis into the possibility of using an electronic computer to convert numerical data into the electrical signals recorded on the magnetic tape. This would eliminate the first manual machining operation.

G-E engineers have emphasized that the control must be individually engineered to suit each installation.

HERE'S A DOZEN GOOD PLACES TO START CUTTING CORROSION COSTS



with PITT CHEM TAR BASE COATINGS

TAKE A GOOD look around your plant and you'll probably find a lot more than a dozen spots where corrosion is eating away your investment in plant and equipment. You can stop this costly waste *now* with durable, economical *Pitt Chem* Tar Base Coatings. These versatile protective coatings were specifically formulated to protect structural steel . . . tanks . . . underground piping . . . masonry . . . and stone surfaces against mineral acids, alkalis, corrosive vapors and atmospheric conditions.

Pitt Chem Tar Base Coatings are easy to apply and provide a film up to ten times as thick as ordinary paints. Their black color doesn't fade or discolor—even after years of use. *No other material does such a complete job of protection at so little cost.* ● We'll gladly offer recommendations for your specific problems. *Write today!*

PITT CHEM 101—For Severest Conditions
PITT CHEM 102—Maintenance Coating
PITT CHEM 103—General Purpose Coating
PITT CHEM 104—Potable Water Service
PITT CHEM 105 AQUATAR—A Water Dispersion
PITT CHEM 106 TARMASTIC—Sealing Compound
PITT CHEM 107 PACHKOTE—Specialty Coating
PITT CHEM 110—Specialty Coating

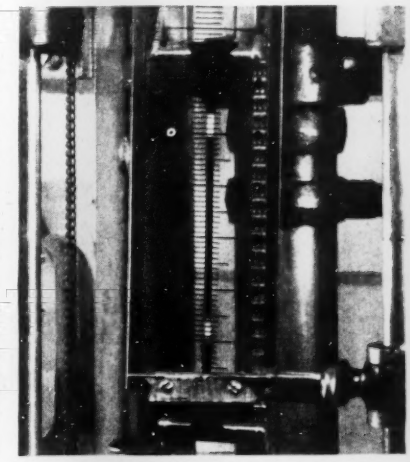
PROTECTIVE COATINGS DIVISION
PITTSBURGH COKE & CHEMICAL CO.
Grant Building • Pittsburgh 19, Pa.

COAL CHEMICALS • AGRICULTURAL CHEMICALS • FINE CHEMICALS • PROTECTIVE COATINGS • PLASTICIZERS • ACTIVATED CARBON • COKE • CEMENT • PIG IRON

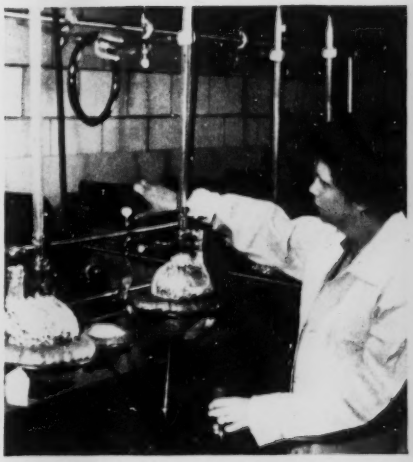
1. Over 800 Parker compounds have been developed to meet your individual O-ring and custom-molded rubber requirements. Just *any* compound won't do the job. Parker checks your specifications to see which compound is best. If none do the job, we'll formulate and mix (shown above) a special compound to solve your individual problem.

Look how Parker makes sure you get the right O-ring for each specific application

2. Tensile strength is one of the many specifications that each Parker O-ring compound must pass. Other tests prove resistance to both tear and abrasion.

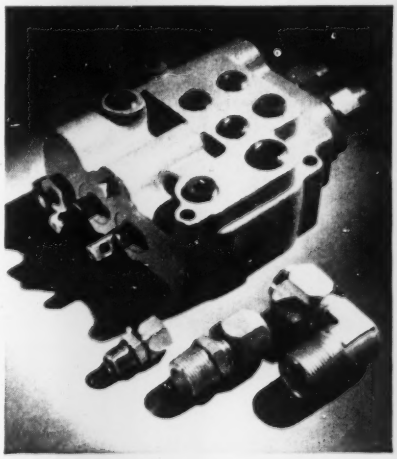


3. Elongation, being tested here, and maximum compression set are other vital factors that determine which compound will assure leakproof O-rings for your application.



4. Fluid and temperature tests help assure long life of Parker O-rings. Compounds are checked for resistance to oil, fuel, or chemicals at high or low temperatures.

5. Prove for yourself that Parker O-rings are right for your specific application. They're economical to use. And they help designers save weight and space!



6. What other Parker products for hydraulic and fluid systems interest you? Triple-lok flare tube fittings? Ferulok flareless fittings? New hydraulic directional control valves?

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Cleveland 12, Ohio

Please send me the following information:

- ☐ O-ring catalog No. 5100
- ☐ Custom-molded rubber catalog No. 5201A1
- ☐ Information about these other Parker products

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The Parker Appliance Company
17325 Euclid Ave., Cleveland 12, Ohio
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Parker

Hydraulic and fluid system components

WHY IT PAYS TO BUY STEEL FROM WAREHOUSE

You don't get caught with steel you can't use!

WHEN YOU BUY STEEL FROM WAREHOUSE, YOU GET:

- LOWER INVENTORY COSTS
- LOWER SPACE COSTS
- LOWER TIME COSTS
- LOWER CAPITAL INVESTMENT
- FASTER PRODUCTION
- FEWER INVENTORY LOSSES

You can avoid this costly possibility by using the nearest U. S. Steel Supply warehouse as your own. From it, you can get the steel you need . . . in large or small quantities . . . cut to your specifications . . . delivered to your production area . . . at the time you desire. You run no risk of inventory obsolescence. Your U. S. Steel Supply salesman will help you put your steel purchasing on a most economical and efficient basis.

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UNITED STATES STEEL

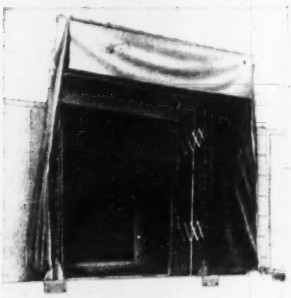
NEW PRODUCTS and equipment

Reply card on page 143 will bring you more information on any new products and equipment in this issue

Combination Loading Shelter

. . . used without loading dock

Combination of standard scissor and outrigger dock shelters is available where no loading dock is used. The model is mounted on a concrete abutment and pro-



vides complete protection to men and materials when unloading from a boxcar into a truck.

Scissor part extends into the boxcar where it is fastened securely. The outrigger fits around the truck. When not in use, the shelter folds neatly together. Atlas Industries Inc., Dept. ST, Chicago, Ill.

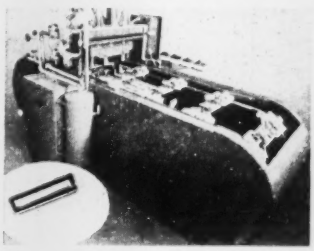
FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Automatic Resistance Welder

. . . 600 pieces per hour

Simplicity in loading makes possible production in excess of 600 pieces per hour in this resistance welding application. This machine was built specifically to weld retainers to valve gasket covers. Its continuous chain conveyor carries twelve fixtures moving intermittently by means of an air cylinder.

Air-operated stop pin gains positive location as 12 spot welds are made simultaneously. Multi-Hydromatic Welding & Mfg. Co., Dept.



ST, 23171 Groesbeck Highway, E. Detroit, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Liquid Stainless Steel

. . . applied by spray or brush

Manufacturer reports any base material can be coated quickly by brush or spray with this liquid stainless steel. Result is said to be corrosion resistance and impermeability to moisture of 18-8 No. 302-type stainless in an easy-to-apply form. Protective Coatings Inc., Dept. ST, 807 N. Fremont Ave., Tampa 6, Fla.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Leaded Petroleum Compound

. . . protects metal surfaces

Barcote No. 600 is a leaded petroleum compound developed to protect metal surfaces against corrosion. Material is recommended for four types of application: Protection of structural steel and sheet metal; protection of rails and rail joints; lubrication of wire rope; and protection of metal parts in storage.

Because the film is semihard and rubber-like in nature, it expands without flaking, cracking, falling away or blistering.

Compound can be applied by brush or spray, providing coverage with a thin film that sets to a semi-hard coating of pure lubricant. Brooks Oil Co., Dept. ST, 934 Ridge Ave., Pittsburgh 12, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 4

Corrugated Paper Container

. . . weight, cost are halved

Nails, nuts, bolts and other heavy metal products are being shipped in this corrugated shipping container. Major advantages: Weight is reported about half that of wooden kegs, considerably lower

initial cost, savings in warehouse space. Example of the latter is evident wherein pallets that hold 21 kegs will move and store 30 boxes.

Boxes provide opportunity for printing product identification and promotion, simplify inventory control. Hinde & Dauch Paper Co., Dept. ST, Sandusky, O.

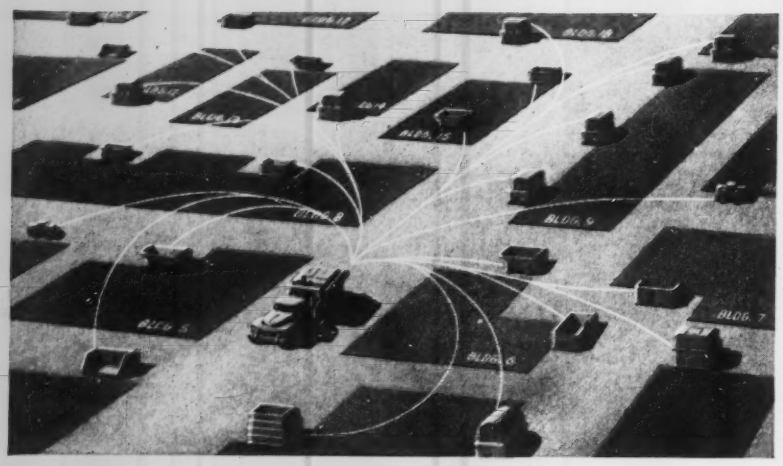
FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Powdered Metal Electrode

. . . fast hand welding speeds

Jetweld electrode incorporates powdered metal into the coating. This coating type uses heat of the arc with excellent efficiency to achieve fast hand welding speeds.

The electrode is a heavily-coated shielded-arc type for operation in flat or near-flat positions with alternating or direct current. It is suited for welding, without

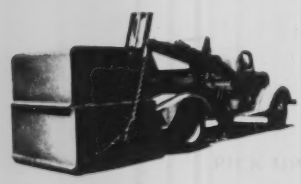


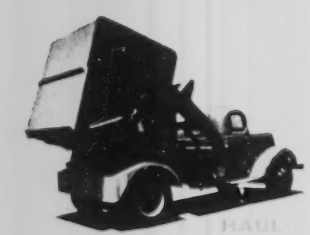
What you can do about your high cost of bulk Materials Handling

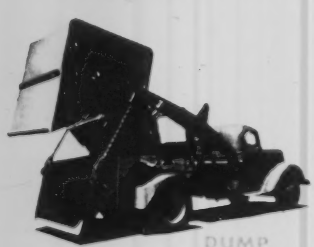
The picture above tells the whole story of the Dempster-Dumpster System of Bulk Materials Handling. Never before have you been able to cut bulk materials handling costs so drastically! One truck-mounted Dempster-Dumpster handles the entire group of Dempster-Dumpster Detachable Containers. It's like having scores of truck bodies for a single truck.

Containers are spotted at convenient materials accumulation points. When loaded each is picked up, hauled and emptied (as shown at left) . . . or load set down intact. Entire operation is handled by only one man, the driver, by hydraulic controls in cab.

Each container is designed and built in the desired size up to 12 cu. yds. to suit the materials to be handled—be they solids, liquids or dust . . . hot or cold . . . bulky, light or heavy. You can handle, at tremendous savings, materials of many descriptions—trash and waste materials, raw materials, finished products, etc.—with only one truck and only one man, the driver. Write to us for complete facts. Manufactured exclusively by Dempster Brothers, Inc.







THE DEMPSTER DUMPSTER SYSTEM

DEMPSTER BROTHERS, 6113 Dempster Bldg., Knoxville 17, Tenn.

NEW PRODUCTS and equipment

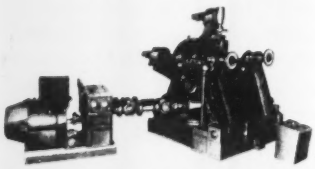
cracking and without surface holes, some of the higher carbon steels. Welding speeds typical in lap or fillet work are on the order of 12 to 15 ipm. Lincoln Electric Co., Dept. ST, Cleveland 17, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Seven-Roll Straightener

. . . confines work to pass line

Accurate end-to-end straightening is gained by roll arrangement in this tube and bar straightener, the model 4 KTC. The straightener employs the manufacturer's seven-roll principle with cluster roll



arrangement, which positively confines work to the pass line without guides.

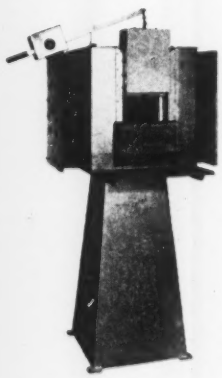
The model is designed for 3-5/8 to 12-inch OD tubes and bars from 3⅝ to 7½ inches in diameter. Sutton Engineering Co., Dept. ST, Bellefonte, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Improved Hardening Furnaces

. . . heavy welded plate base

Greater floor support results from addition of heavy welded plate base to this model Y line



of high speed steel hardening furnaces. Other refinements include close regulation of heat at operating range, rapid heating to

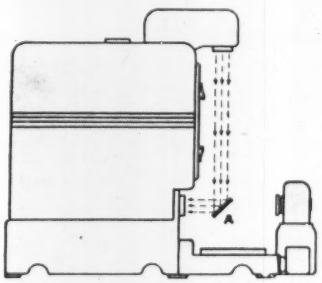
(Advertisement)

Plain Pointers on Projection

AMONG the definitions listed by Webster for the adjective *universal* is: "adapted or adaptable to all or to various uses, sizes, shapes, et cetera"—a definition we like to feel applies to Kodak Contour Projectors.

Admittedly, we make two projectors, one for routine inspection gaging (the low cost of which might surprise you) and a second for toolroom use affording measurements to "tenths." Optically, however, these two instruments are one. And it's their optical system which makes them truly "universal."

Back in the early days of design, our engineers set out to provide in a single contour projector light sources both for horizontal and for vertical shadow projection. They also developed the unique Kodak Surface Illuminator, a self-contained light source which affords surface projection in either plane. Their reasoning was economic. By combining these features, the instrument could be easily adapted to a wide range of parts; the more uses to which the projector might be put, the sooner it would pay for itself in the shop.

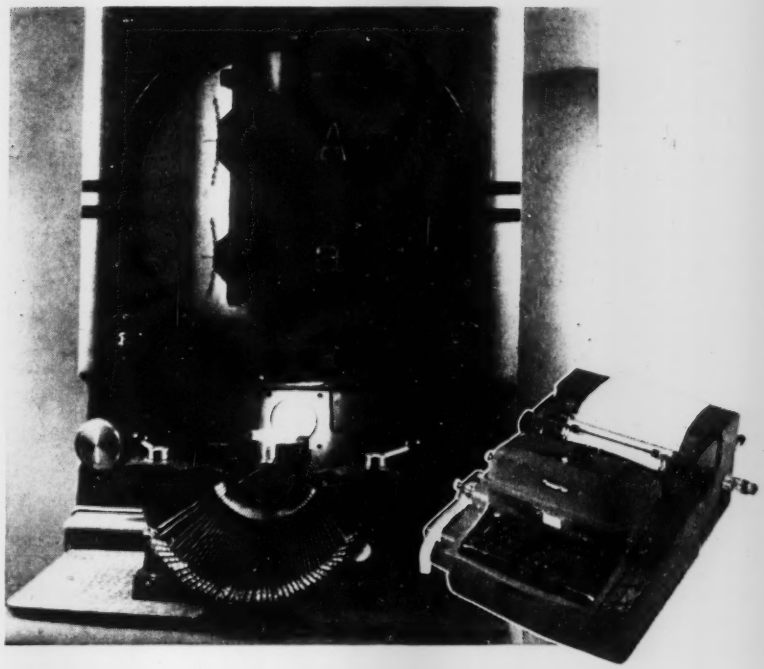


Above drawing illustrates how vertical light source is utilized. With part on a glass staging platform, image is reflected by mirror (A) into optical system of projector.

Nothing has happened since the design stage to shake us in this belief. However, we have been somewhat surprised by some of the highly ingenious ways in which our projectors are used: as in the case of the typewriter fixture (illustrated in our advertisement at the right), where the surface illuminator yields a simultaneous plan and profile view of the type bar face.

Equally ingenious, if not more so, is a device which employs both the horizontal and vertical light beams to simultaneously project the shadow image of a shaft and a reticle scale for gaging its tolerances. A description of this application, which runs to more words than space here affords, is available on request from the Special Products Sales Division, Eastman Kodak Company, Rochester 4, N. Y. Just ask for the folder on the new, universal shaft checking fixture.

Applications such as these have opened the eyes of many engineers to the fact that inspection by optics today has overcome traditional limitations. In the best sense of Webster, contour projection may be "adapted to various uses, sizes, shapes, et cetera." And to the solution of various problems in inspection and precision measurement, including, perhaps, your own.



This "3-D picture" showed the way to cut aligning time 25%

What you see here on the Kodak Contour Projector is both the *front* and *side* view of a typewriter type bar—a picture that helped reduce aligning time 25% at Commercial Controls Corp., manufacturers of tape-controlled Flexowriters and Justowriters.

Light reflected from the surface of the type character provides an image for rapidly checking horizontal and vertical alignment of the letter. Simultaneously, mirrors in the special holding fixture project a profile image of the type—yield an accurate check of the desired position of the letter as it will contact the platen. Only the Kodak Contour Projector's unique surface illuminator makes possible this combined plan and profile view.

Alignment of type is a critical factor on these automatic machines which type at 100 words a minute and must produce copy for printing reproduction. Until recently, Commercial Controls had to perform this inspection operation during final assembly. Now, this new gaging technique has made it possible to inspect the type bars immediately after their removal from the soldering jigs. Each bar is quickly moved into place and compared with the tolerance lines of the chart-gage on the screen. Alignment of letters is held to a tolerance of ±.0002", contact to ±.0015". And, by catching errors at this point, aligning time has been cut 25%.

Perhaps the speed, precision, and economy of optical gaging can help you solve a difficult inspection or measurement problem. There is a field representative in your area who will be glad to discuss your problem with you. You can get in touch with him or obtain a copy of the booklet, "The Kodak Contour Projector," by writing to:

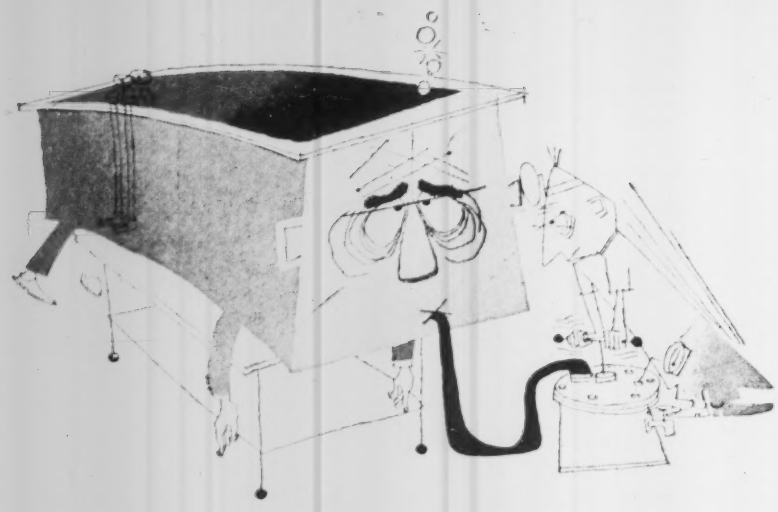
Special Products Sales Division
EASTMAN KODAK COMPANY
Rochester 4, N. Y.

the KODAK CONTOUR PROJECTOR

Optical Gaging

A new sound movie, Optical Gaging, shows how to simplify complex inspection problems. We'll tell you how to get it for a showing.

Kodak
TRADE-MARK



has coil-itis* cramped your production flow?

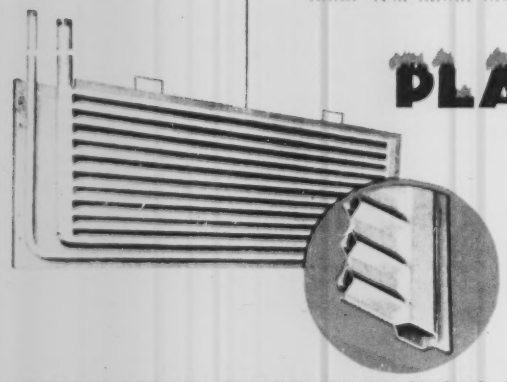
It's a waste of costly time to pump out the solution every time your process heating and cooling tanks get indigestion due to pipe coil troubles. You can save this cost and eliminate production bottlenecks by replacing the pipe coils with Platecoils. Platecoils can be removed and replaced **without dumping the solution.** They simplify maintenance and save hours of downtime. They heat or cool 50% faster and take 50% less space in the tank. As revolutionary as the new wonder drugs, Platecoils cure production troubles involving heat transfer . . . and give profits a shot in the arm.

Write for bulletin P72 today!

PLATECOILS SAVE 50% IN HEAT TRANSFER COSTS

PLATECOILS TRIPLE PRODUCTION

At Continental Motors Corp., 3 crankcase sections can be cleaned at one time when Platecoils are used while only one crank case can be cleaned with pipecoils in the tank. Ask about other case histories.



PLATECOIL

REPLACES PIPE COILS

*Coil-itis — Diagnosed as tank heating and cooling problems. **Platecoils** — the prescription for solving pipe coil problems.

PLATECOIL DIVISION, TRANTER MANUFACTURING, inc., LANSING 4, MICHIGAN

NEW PRODUCTS and equipment

desired temperatures and generally improved operating economy.

Silicon carbide resistors located above and below the one-piece muffle chamber supply the heat. Heating elements and terminals are readily accessible on each side of the furnace, protected by asbestos shields and removable steel mesh guards. Sentry Co., Dept. ST, Foxboro, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Solvent Spray Gun

. . . provides continuous cleaning

Continuous spray cleaning by solvent, emulsion or aqueous solutions is accomplished easily with this model B-202 siphon spray gun. Unit draws cleaning fluid directly from a 55-gallon drum and eliminates lost time needed to refill small supply-can reservoirs.

A die-cast handle, built to stand

over 4 tons of shock, an air flow control valve and ball check to prevent fluid flow-back are other features. John B. Moore Corp., Dept. ST, Nutley 10, N. J.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Waterless Cleanser Dispenser

. . . two-way feed adjustment

This dispenser for waterless skin cleanser is held to a minimum of parts which are continuously lubricated by the cleanser itself. Two-way feed adjustment provides choice of amount dispensed.

Entire dispensing unit is constructed of heavy aluminum, with rigid mounting bracket an integral

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.

INFORMATION

AVAILABLE FOR THE ASKING

69. Copper & Brass Products

Chase Brass & Copper Co.—File size bulletin lists nearly 70 catalogs and technical handbooks on copper and brass products from washers to tube and pipe. Promotion material available for radio and newspaper use is also indicated.

70. Lead-Steel Bars

La Salle Steel Co.—Discussion in 8-page bulletin No. 8 on properties and application of La-Led lead bearing steel bars covers its machinability, surface quality, bending and crimping qualities and machined tolerances. Application case histories are included.

71. Metalworking Coolant

Fiske Brothers Refining Co.—General recommendation as to dilutions is made in data sheet describing Fiske's Magic Compound, a coolant-lubricant for milling, drilling, grinding, wire drawing and stamping operations. Compound is furnished as water-mix paste.

72. Over-Running Clutches

Formsprag Co.—Over-running, indexing and backstopping clutches made with full complement of "sprags" are subject of illustrated folder and engineering data sheets. High torque capacity for size and weight is feature. Applications include dual drives, stock feeds and use in machine tools.

73. Brass Nuts

Fischer Special Mfg. Co.—"Fischer Turned Brass Nuts" is title of 16-page illustrated bulletin. Types described include hexagon nuts, closed and open end cap nuts, thumb, lighting fixture, spark plug and battery nuts, in addition to various special types. Information on newly revised standards is given.

74. Magnetic Sheet Separators

Basco Mfg. Co.—4-page illustrated bulletin 1053 describes five standard models of magnetic sheet steel stock separators. Units fan edge of stock so that it can be readily gripped, even though it is nested and oily. Largest model will handle stock up to ¼-in. thick.

75. Polishing Equipment

Murray-Way Corp.—6-page illustrated bulletin "Micro-Polish . . . Your Production" shows various units for polishing sheet or bar stock and various castings. Combinations of such equipment in a conveyorized production setup are also illustrated, along with features of various units and accessories.

76. Arc Welding

Hobart Brothers Co.—In 40 illustrated pages, bulletin EW173 shows arc welding procedures and equipment at work in 18 different industries in production, maintenance and repair. Company line of arc welders, electrodes and accessories is also fully described and illustrated.

77. Ferrous Castings

Detroit Gray Iron Foundry Co.—Expanded ferrous casting services of this company are described in 12-page illustrated brochure. Company produces low, medium and high carbon steel castings. Flamaloy, a process for flame hardening steel to a tensile strength of 100,000 to 110,000 psi, is discussed. Castings up to 35 tons can be made.

78. Crane Grapples

Eastern Brass & Copper Co., Shur-Grab Grapples Div.—Caliper and specialized types of coil and general materials handling crane and hoist grabs are shown in 12-page illustrated bulletin. Standard types have capacities ranging up to 5000 lb. Complete data on more than 9 units and attachments are given.

STEEL
Penton Building, Cleveland 13, Ohio

11-9-53

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79. Tap Selector

Threadwell Tap & Die Co.—Operating on the slide chart principle, this pocket-size "tool" functions as a fractional size tap selector and machine screw tap selector. All necessary thread information is given. Tapping speeds and lubricants, tap limits and other basic data are included.

80. Threading Power Drive

Beaver Pipe Tools, Inc.—Lightness and durability of model D aluminum power drive for pipe threading tools are stressed in 4-page illustrated form NU-953. Its features are outlined. Also covered are model C power drive, a ½- to 2-in. power drive threader and a power drive pipe cutter.

81. Rotary Shears

Kling Bros. Engineering Works—Rotary shears with capacities of ¼, ⅜, ½ and ⅝-in. and throat depths of 36 and 48 in. are subject of 8-page illustrated catalog 215A. Construction features are outlined and complete specifications are noted. Various operations that can be performed are shown.

82. Ovens & Furnaces

Carl-Mayer Corp.—Heat treating furnaces and ovens are covered in 6-page illustrated folder HT-53. Typical installations of car bottom, batch, conveyor and special type units are shown in action, with brief captions giving salient features.

83. Corrosionproof Tubing

Samuel Moore & Co., Dekoron Tubing Div.—Several kinds of corrosionproof Dekoron instrument tubing is described in bulletin L6506. Covered are a single-line metal tubing with plastic sheath, a multiple metal harness with polyethylene coating, and multiple polyethylene tube harness with vinyl sheath. Harnesses have from 4 to 19 tubes.

84. Crane Cab Conditioners

Lintern Corp.—Crane cab air conditioners are described in 16-page illustrated bulletin AC-533. Seven models meet all requirements in cooling, filtering and heating for all temperature ranges and cab sizes. Selection data are given so that proper model is chosen for a particular job. Two cab heaters are also included.

85. Miniature Ball Bearings

Miniature Precision Bearings, Inc.—20-page illustrated catalog offers design and application data on miniature ball bearings ranging from 0.100 to 0.375-in. Technical data are supported by drawings, graphs, tables and photos. Radial, angular contact, pivot and thrust bearings are covered.

86. Brushes

Osborn Mfg. Co.—80 pages of illustrated catalog 210-A contain information on power driven brushes, paint and varnish brushes and maintenance brushes, all in a wide variety of types and sizes. They are made of wire, bristle, fiber and hair. Much general information is given on selection, use, applications and features.

EDITORIAL ARTICLES

Available in Limited Quantities

87. Boring Mill Improved

"Boring Mill Has Strong Arm" is title of STEEL article which describes new underarm support which adds rigidity to operations performed away from column on horizontal boring, drilling and milling machine at Giddings & Lewis Machine Tool Co.

88. Magnesium Extrusions

"Impact Extrusion of Magnesium" has a bright commercial future according to STEEL article of this title. Metal flows at 350 to 500° F and at about half the pressure needed for aluminum. Light weight products resist corrosion and have good electrical and heat conductivity.

89. VPI Packaging

Vapor phase inhibitor continues to get high marks in preserving ferrous parts. It's making many of the messy, expensive and inconsistent methods obsolete. In STEEL article "Packaged Corrosion Losing to VPI," Assistant Editor W. R. Wolfe tells what VPI can do, how it can reduce costs, its limitations, protection life and its effect on nonferrous and nonmetallic objects.

90. Electric Furnace Output

Higher power and larger electrodes will be employed on large electric furnaces in the future, according to STEEL article "Carbon Steel Ingots . . . Thirty Per Cent Electric by 1975." Article summarizes important points made in papers presented at recent AISE convention in Pittsburgh. Reports highlighted other industry trends, progress and improvements.

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part. Special throw-away container provides simple filling.

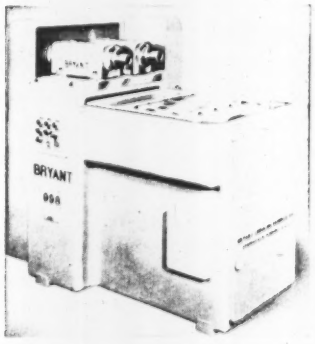
Sugar Beet Products Co., Dept. ST, Saginaw, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

Boring, Drilling Machine

. . . fine finish, high production

Designed for consistent accuracy, this machine does boring, precision drilling, straight or contour turning and boring, facing and grooving where fine finish and high production are desired. Because it is an



all-mechanical machine, its cycle, once set up, is positive and constant.

Ample fixture mounting surface is provided on the table, which measures 17½ x 22 inches. Table has three ½-inch T-slots, and can

USE A REPLY CARD

Just circle the corresponding number of any item in this section for more information.

NILSON FOUR-SLIDE

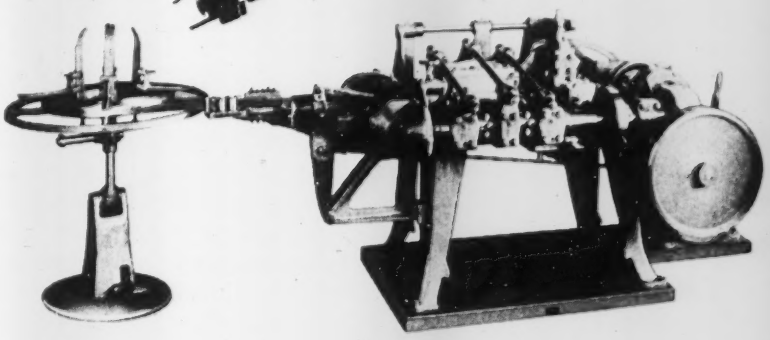
It's easy to get HIGH PRODUCTION . . . and UNIFORMITY, too!

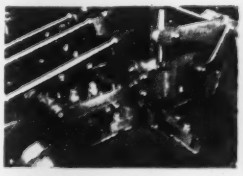
Wire and Ribbon Metal FORMING MACHINES

UNIFORMITY in automatic production doesn't come by chance! In the case of wire and ribbon stock forming on NILSON 4-SLIDES, *it means control of the material from the coil to the final form.*

Parts, such as illustrated, are produced to tolerances of .002 at critical dimensions. Dies and forming tools, once installed (faster and simpler with NILSON'S open construction) maintain close tolerances for short and long runs. One machine! One set-up! Increased production! Maximum uniformity!

Model SF3 NILSON 4-SLIDE, shown below, with No. 51B Tilting Stock Reel, is a complete unit that can be set-up in any convenient location.





Close-up of the NILSON forming section with the built-in Horizontal Press to the left. This design eliminates secondary handling and insures product uniformity because the sequence of stamping and forming is automatically controlled.

Close-up of the NILSON feed mechanism . . . capable of feeding wire and ribbon metal to tolerances of .001. Another important element in insuring product uniformity. Positive control is maintained over the material regardless the length of feed.

Range of sizes

Wire Forming
1/32" through ½" wire. Feeds up to 32".

Ribbon Stock Forming
1" through 3½" wide material. Capacity of press section 5 to 10 tons; 50 to 75 tons in heavy duty types.

For specific recommendations — send details of your operation.

THERE'S NOTHING LIKE A NILSON

NILSON has been specializing in Forming Equipment for over 50 years.

THE A. H. NILSON MACHINE COMPANY
1512 Railroad Avenue • Bridgeport 5, Connecticut
CHICAGO • CLEVELAND • DETROIT • LOS ANGELES • HAMILTON, ONT., CANADA

Automatic Chain-Making Machines • Automatic Staple Forming Machines • Wire and Stock Reels • Foot Presses • Wire Straightening Equipment • Slide Feeds for Presses

Try this pair of nylons for longer, more comfortable service!

WILLSON
Kover-Mor goggles
Strong...Light...Comfortable

For Weldors ▸

Willson *Spatterproof* cover glass protects *Willson-Weld* filter glass against pitting. (*Note* four indirect ventilating ports admit ample air but keep out sparks and flashes)

Style CW 70

Style CC 70

◂ For Chippers

Willson *Super-Tough* lenses are heat-treated for impact resistance. (*Note* four screened eye cup ports admit air to keep lenses fog-free)

Kover-Mor Welding and Chipping Goggles fit easily over larger-frame prescription glasses—use standard 50 mm. round lenses—offer these other new Willson developments:

1. Lightweight nylon offers *highest strength weight ratio* known for goggle cups; non-flammable; won't conduct heat

2. External screw caps permit *easier lens* changing—no springs or clamps to remove

3. Standard 50 mm. round lenses make it unnecessary to stock odd-size replacement lenses

4. Extra ventilation is provided by slots in screw caps plus ports in cups

5. *Rigid metal top bar* makes Kover-Mor Goggles easier to handle; keeps them firmly in place

Ask your Willson distributor for new Kover-Mor* Welding or Chipping Goggles — strongest lightweight goggles you can get — or write for new bulletin.

Easy to get anywhere!

*Trademark

More Than 300 Safety Products Carry This Famous Trademark
WILLSON®
Established 1870

WILLSON PRODUCTS, INC., 233 Washington St., Reading, Penna.

NEW PRODUCTS and equipment

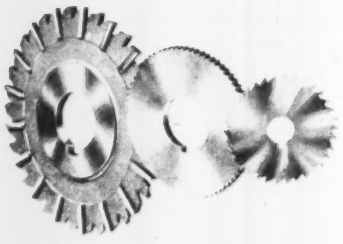
accommodate a wide variety of fixtures. Bryant Chucking Grinder Co., Dept. ST, Springfield, Vt.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Metal Cutting Tools

. . . long life at high speeds

Summit metal cutting saws, screw slotting saws, small circular saws, side chip and staggered tooth saws are being marketed in the U. S. by this distributor. Line is made of high tungsten steel for long life at high speeds. L. H. Chappel & Co., Dept. ST, 1137 Post Rd., Fairfield, Conn.

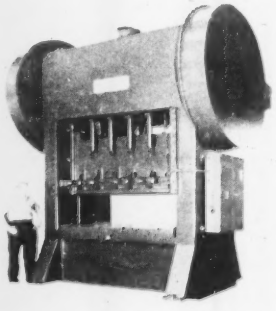


FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Heavy Press Line

. . . ranges from 160 tons

Manufacturer enters the heavy press field with introduction of a press line ranging from 160 tons capacity. Machines, called Wickliffe presses, will supplement Steelweld bending press and shear lines, are intended for such applications as forming, blanking, piercing, trimming, light embossing and drawing.

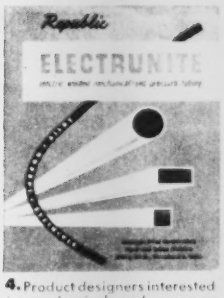


The mechanical presses are designed for high-speed mass production work, encompassing rigidity, long life and minimized maintenance. All parts are readily ac-

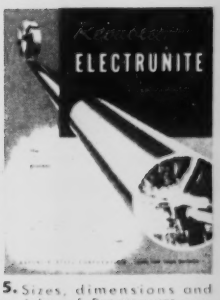
1. Here are all the facts on ELECTRUNITE E.M.T. Includes bending tools and accessories; dimensions and weights of tubing and elbows; facts on "Dekoron Coated" E.M.T.

2. How to specify boiler, heat exchanger and condenser tubes is only one information-packed section of this 20 page booklet. Also includes allowable working pressures.

3. Handy wall chart with bending instructions for use with "Inch Marked" ELECTRUNITE E.M.T. Diagrams are large, easy to read, easy to follow. For quick reference.



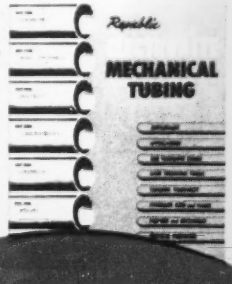
4. Product designers interested in mechanical and pressure tubing will find a lot of facts in this brochure. Pictured are many examples of products where costs were trimmed.



5. Sizes, dimensions and weights of ELECTRUNITE mechanical tubing, pressure tubing and electrical metallic tubing are included in this 8 page booklet. Also fabricating.

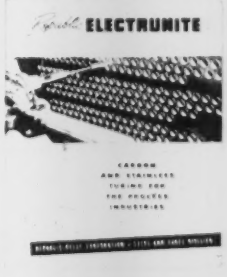
6. This handy chart puts size, gage ranges at your fingertips. Easy to carry in your pocket. Covers mechanical pressure and stainless tubing, along with stainless steel pipe.

7. Lots of help for design engineers in this 8 page brochure on Mechanical Tubing. Includes advantages; applications; size-tolerance tables; gage tolerance tables.

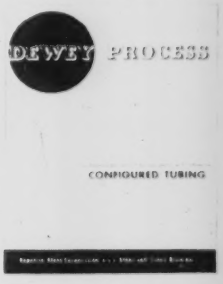


8. Most of what you need to know about Stainless Steel Tubing and Pipe can be found in this 28 page booklet. Data on fabricating and finishing, how to lay out drawings.

9. Carbon and stainless tubing for the process industries are described in this booklet. Valuable laboratory corrosion data along with properties of Enduro Stainless Steel Tubing.



10. Product designers balked by the high cost of unusual tubular shapes will be interested in this booklet on the Dewey Process for configured tubing. Process is shown in pictures.



Here's Your FREE LIBRARY

On Mechanical Tubing, Pressure Tubing, Stainless Steel Tubing And Pipe, And Electrical Raceways

11. When journeymen want instructions on how to bend ELECTRUNITE E.M.T. all you do is hand them this booklet of bending instructions. Pocket size.

12. Pictures and captions tell the story of how to use the Republic ELECTRUNITE E.M.T. 1¼" bender.

13. Some ideas on where to use tubing profitably are contained in this handy reference folder. Also contains size ranges.

14. Advantages of using "Dekoron Coated" ELECTRUNITE E.M.T. are explained in this compact folder. Shows how easy it is to install this polyethylene coated raceway in corrosive atmospheres.

15. Eight analyses of stainless steel tubing, pipe and general uses.

16. Outstanding features of ELECTRUNITE E.M.T. are briefly described.

17. Complete engineering data on "Dekoron-Coated" ELECTRUNITE E.M.T.

18. Advantage using ELECTRUNITE boiler, heat exchanger or condenser tubes.

Republic ELECTRUNITE TUBING

REPUBLIC STEEL

CLIP COUPON AND MAIL TO:

REPUBLIC STEEL CORPORATION, *Steel and Tubes Division*
253 East 131st Street, Cleveland 8, Ohio

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Company _____

Address _____

City _____ *Zone* _____ *State* _____

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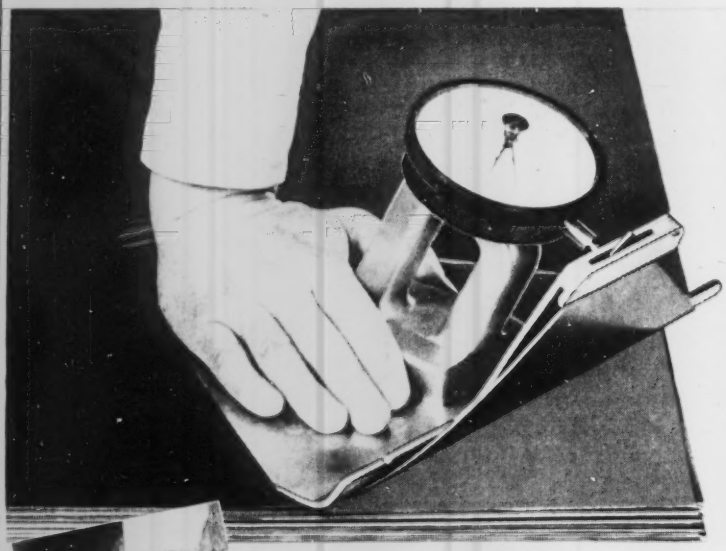
FLEX-TESTER

FOR NON-DESTRUCTIVE TESTING OF SHEET METAL FOR DRAWING QUALITIES AND STRETCHER STRAIN

DEVELOPED BY JONES & LAUGHLIN STEEL CORP.
SOLD EXCLUSIVELY BY STEEL CITY



FLEX-TESTER does its job quickly. Can be used to select sheets suitable for forming desired part. User can save better material for more severe draws; use poorer grade for simpler work. Enables application of material of uniform quality. Determines need for roller leveling, particularly on exposed panels where stretcher strain is detrimental. Hand operated; light weight; easily carried. Proven in use on hundreds of jobs. Write for descriptive bulletin or demonstration in your plant.

MANUFACTURERS OF MACHINES FOR TESTING PHYSICAL PROPERTIES OF METALS including BRINELL, DUCTILITY, UNIVERSAL TENSILE, COMPRESSION, TRANSVERSE, HYDROSTATIC, SPECIAL TESTING MACHINES AND PROVING INSTRUMENTS

Steel City Testing Machines Inc.

8819 LYNDON, DETROIT 21, MICH.

NEW PRODUCTS and equipment

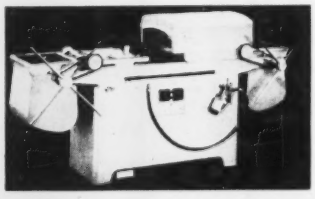
cessible, easily removed and replaced. Frames are straight-sided and consist of four members—crown, two side housings and bed—held together by tie rods shrunk in place. Cleveland Crane & Engineering Co., Dept. ST, Wickliffe, Ohio.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Shell Molding Machine

. . . up to two shells per minute

Featuring dual dump boxes and choice of gas or electric curing oven, this machine is reported to produce up to two shells per minute. Unit is available with automatic timers for both inversion



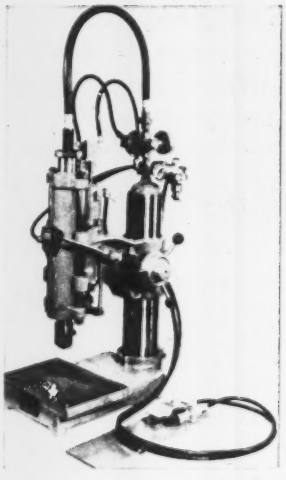
and curing cycles. Castings are achieved with tolerances as close as 0.005-inch per inch. Shalco Engineering Corp., Dept. ST, 81 Encina Ave., Palo Alto, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Pneumatic Impact Press

. . . marking function expanded

Designed originally for impression marking of metal parts, this



press has been extended to stamping, staking, swaging, upsetting and riveting operations. Length

AIR HARD
5% chromium air hardening die steel . . . high strength . . . high wear resistance . . . good machinability.
OHIO DIE
High carbon . . . high chromium die steel . . . air hardens in any size section without movement . . . outstanding wear resistance.
CROCAR
High carbon . . . high chromium steel . . . oil or air hardening . . . highest wear resistance . . . no movement in hardening.
RED STAR TUNGSTEN
Oil hardening die steel with unusual edge strength and wear resistance . . . high hardness.
COLONIAL No. 6
Manganese oil hardening . . . general purpose die steel . . . specially annealed for good machinability . . . low movement in hardening.
NON-SHRINKABLE
FIRST QUALITY

cold work

These Die Steels for Cold Work are designed to cover every performance requirement, and for adaptability to available heat treating facilities. Each grade is carefully annealed and fully inspected by magnaflux, reflectoscope and deep etching to insure First Quality selection. Our Representative in your area will gladly assist you with your needs.

Write for your free copy of our detailed metallurgical brochure on "Die Steels for Cold Work."

Vanadium-Alloys
STEEL COMPANY
LATROBE, PA.

COLONIAL STEEL DIVISION • ANCHOR DRAWN STEEL CO.

of hammer stroke or travel inside the cylinder is adjusted by the large hand nut at the top, which changes inner cylinder position.

Clearance may be as little as 0.005-inch with the machine still capable of delivering an impact of any desired force from 30 to 30,000 pounds. Heidrich-Nourse Co., Dept. ST, 631 E. Third St., Los Angeles 13, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

Smoke Density Indicator

. . . overcomes causes of error

Instrument called the Smokescope indicates density of smoke in stack effluent. The portable instrument overcomes causes of error inherent in some previous efforts—for example differences in lighting or background that can affect smoke observation.

Instrument makes it unnecessary to refocus the eye when taking readings. It is never necessary to look alternately at the smoke, then at a comparison chart. Mine Safety Appliances Co., Dept. ST, Pittsburgh, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Magnesium Conveyor

. . . strength, utility, lightness

Fabricated entirely of magnesium, this portable roller conveyor system provides strength and utility with lightness and greater handling ease. Manufacturer reports the system weighs from 15

to 40 per cent less than comparable steel equipment of similar size and capacity.

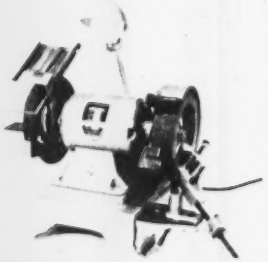
The unit is designed primarily for use where portability and job spotting are major considerations. One man can set up, dismantle or relocate the system. Magline Inc., Dept. ST, Pinconning, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Tool and Drill Grinder

. . . fixture simplifies setting

Wide range tool and drill grinder will point and sharpen No. 60 wire to $\frac{3}{4}$-inch. It permits grinding of point angles from 45 to 75 degrees, clearance angles from 6 to 15 degrees and chisel point



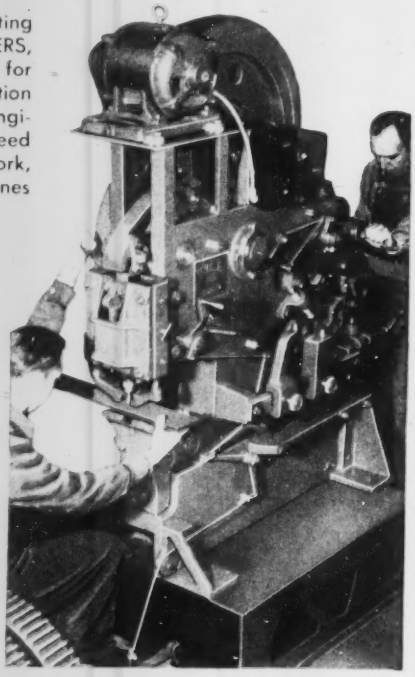
angles from 117 to 135 degrees. Drills are held and positioned in a fixture that simplifies setting of angles, permitting good results by even inexperienced workers.

Because of the machine's lip positioner, accuracy is enhanced in

WEBB PLATE FABRICATING MACHINERY

Steelworkers ALL STEEL CONSTRUCTION

The Webb Corporation, in presenting the line of new WEBB STEELWORKERS, has designed versatile machines for either job-work or high production work. These units have been engineered to meet the particular need of shops having a variety of work, with a result that all-purpose machines are now available.



Five Complete Tools are Incorporated in a Single Unit.

1. Punch for plate, bars or structurals.
2. Cuts angles and tees with straight or miter cut.
3. Cuts off round and square bars.
4. Shears plates and bars.
5. Coping or notching attachment.

One of the main features of these machines is that they are at all times in complete readiness to do any of the above operations and to do the work well.

The punch may be operated at the same time as either the section cutter, bar cutter, shear or the coping and notching attachment . . . therefore, two operators can work at this machine simultaneously without interference. For illustrated literature and prices, write Dept.

Let Speed PAY—The WEBB Way!

SLIP ROLLS

PYRAMID TYPE ROLL

INITIAL TYPE ROLL

STEELWORKERS

Also Manufacturers of INDUSTRIAL WEIGHING EQUIPMENT

Since 1881 THE WEBB® CORP.

WEBB CITY, MO., U. S. A.

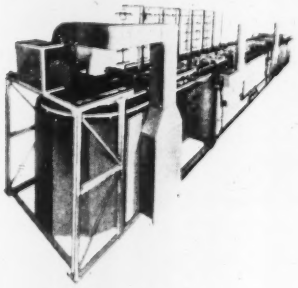
small drill grinding. Drill point gage is furnished so the operator can check chisel point, clearance and point angles quickly. Unit is available for bench mounting or with a steel cabinet pedestal. Drip-type applicator to permit use of lubricant during grinding is optional. DoAll Co., Dept. ST., Des Plaines, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Automatic Plating Machine

. . . two reciprocating motions

This fully automatic electroplating unit has no elevating superstructure, no transfer cams, no chains or sprockets and no hydraulic fittings above the tanks. The two reciprocating movements, longitudinal and vertical, eliminate complicated motions. All working parts are mounted on a central carriage which moves on a single



track and is actuated by hydraulic cylinder.

Maintenance is simplified since all working parts are located between and higher than tanks. Small tanks are used with resulting floor space savings, and, as there is no superstructure, longer racks or baskets can be handled under a minimum of ceiling height. Wagner Brothers Equipment Co. Inc., Dept. ST, Detroit, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Water-Reducible Enamel

. . . refuses to burn

Designed for application on metals, a water-reducible industrial enamel will not burn at normal operating temperatures. Finish is an emulsion type, in which water is employed both as an ingredient and a reducing agent. Qualities meet requirements of automotive, electrical and many other metal-working industries.

Although it is water-reducible in the application process, it is not water-soluble after application. Oil resistance is excellent. It is impossible to ignite the finishing material in its liquid state at normal room or operating temperatures. General Industrial Division, Sherwin-Williams Co., Dept. ST, Cleveland 1, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

Versatile Steam Generator

. . . no interruption in output

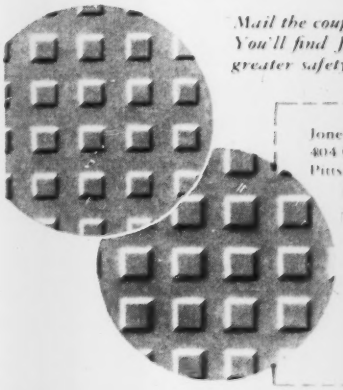
Important in localities where natural gas fuel is available only part of the time, this steam generator can change from fuel-oil to natural gas fuel by flipping one switch and without interrupting steam output. Fuel oil is always ready to be released to combustion chamber because it is continuously circulated through the generator's hydraulic modulating controls.

THAT SETTLES IT-
WE INSTALL
J&L
JAL-TREAD
FLOOR PLATES

The safety of your employees and the public is good enough reason to install walking surfaces of slip-resistant J&L Jal-Tread floor plate.

But here are some other important advantages you'll get when you specify Jal-Tread, the only true checker-board floor plate.

- Reduced worker fatigue from feet rocking on uneven surfaces.
- No wheel shimmy in hand industrial trucks.
- Neat appearance . . . easy draining and sweeping in any direction.
- Easy fabrication—square design allows cutting without shearing through raised cleats . . . welding joint of uniform thickness.
- Easy cold-forming on standard equipment.



Mail the coupon for more information today. You'll find J&L Jal-Tread will pay off in greater safety . . . lower maintenance costs.

J&L STEEL

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Please send me your free booklet on J&L Jal-Tread.
Please have your representative call.

Name
Company
Address

New Way to Reduce Sling Costs 22.3%

Notice how Pin-Lock Thimbles are held securely in position by steel pins. These pins make it easy to transfer Pin-Lock Thimbles to replacement Red-Strand Slings.

Save by reusing Pin-Lock Thimbles on Red-Strand Braided Slings

Now . . . *stop* discarding still-good sling thimbles! With Red-Strand Braided Slings, you simply transfer *reusable* Pin-Lock Thimbles from one sling to another. *Cut costs substantially.*

Savings of 22.3% are typical. See chart at left for other examples.

Pin-Lock Thimbles also guard against unexpected damage to sling loops. They're made of extra heavy, extra durable cast steel.

You save still more because Red-Strand Slings are made of higher-than-rated quality Leschen wire rope—famous for longer-than-expected service.

Doesn't this suggest checking Red-Strand Slings *right now?*

See your LESCHEN representative or write for folder, "NEW IDEAS in Slings."

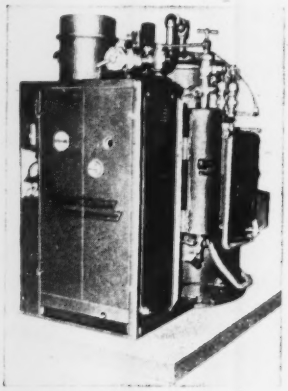
HERE'S HOW MUCH YOU SAVE WITH Red-Strand SLINGS AND Pin-Lock THIMBLES	
Sling Size	% Savings
9/16" x 10'	33.0%
1/2" x 10'	23.6%
1/2" x 20'	17.2%
3/8" x 8'	22.3%
1/4" x 5'	15.5%
3/16" x 8'	13.0%
3/32" x 10'	8.5%

LESCHEN

LESCHEN WIRE ROPE DIVISION · ST. LOUIS 12, MISSOURI
The Watson-Stillman Company
(A SUBSIDIARY OF H. K. PORTER COMPANY, INC.)

NEW PRODUCTS and equipment

Constant spark and pilot light insure positive lighting. This model develops full working steam pressure up to 300 psi, in less than 3 minutes from cold water, and makes 1500 to 5000 pounds of



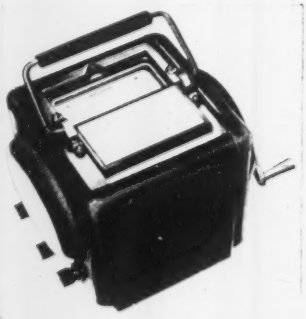
steam per hour. It's efficiency is over 80 per cent. Vapor Heating Corp., Dept. ST, 4501 W. 16th St., Chicago 23, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

Insulation Resistance Tester

. . . withstands rugged use

Features of this Megohmmeter tester include rugged casing and components, simple drive mechanism, free-wheeling generator clutch and separate Alnico magnets for indicator and generator. Unit can withstand rugged field use and gives accurate readings without

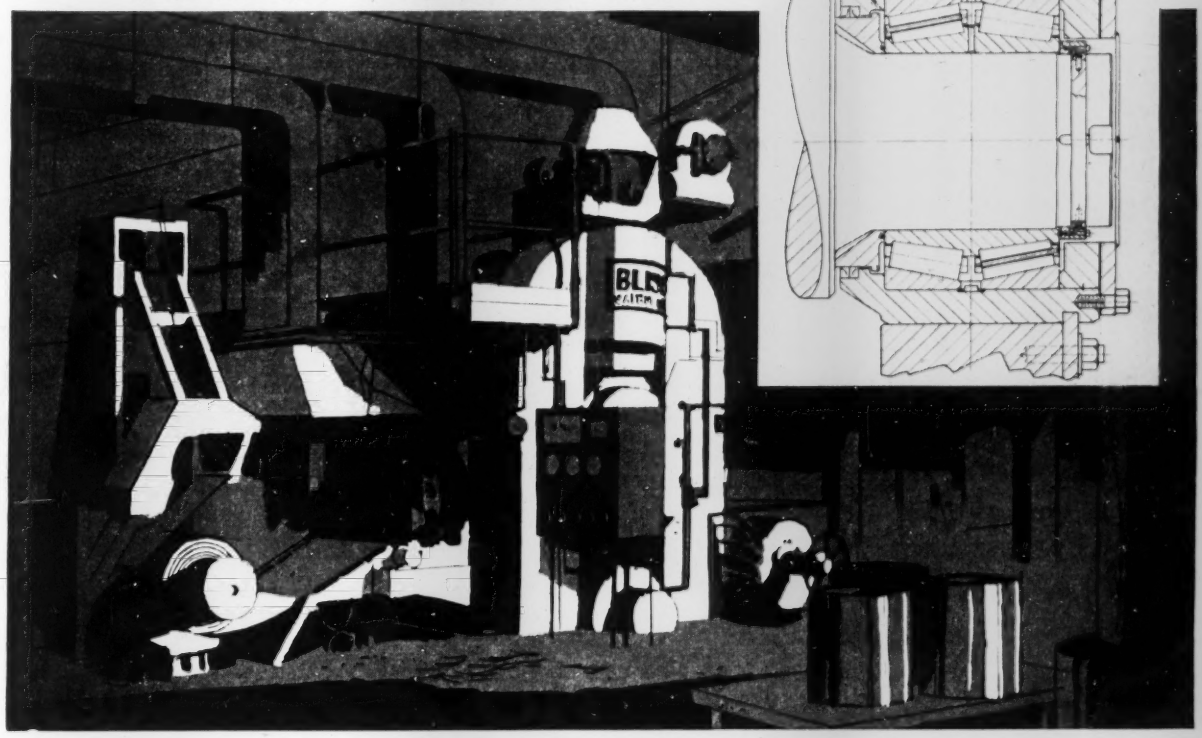


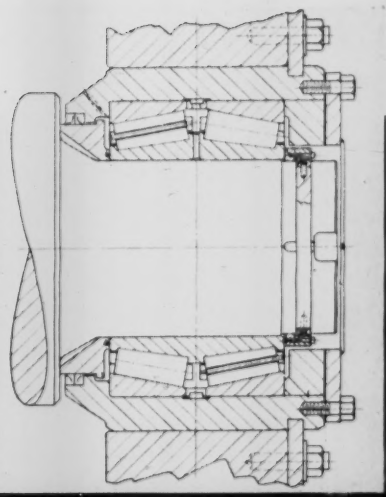
dependence on batteries or external power sources.

Model 5G-1000, reading to 1000 megohm, 500 v self-powered, meets U. S. Government Specification MIL-M-15023. Winslow Co. Inc., Dept. ST, 9 Liberty St., Newark, N. J.

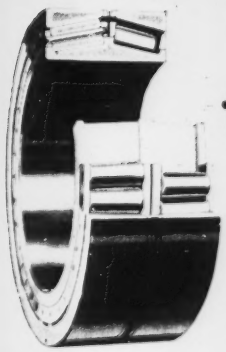
FOR MORE DATA—CIRCLE REPLY CARD NO. 22

TORRINGTON two-row Tapered Roller Bearings and Spherical Roller Bearings were specified respectively for the back-up and work rolls of the custom-designed Bliss 4-high mill furnished to Aluminio Industrial Mexicano, S.A. This is the first mill of its kind designed and built specifically for service in Mexico.





Rolling higher tonnage records!



TORRINGTON two-row Tapered Roller Bearings are speeding production on many of today's toughest back-up roll applications.

Made from the finest of bearing-quality, case hardening steels, they handle maximum radial and thrust loads with ease. Precision ground, the quality of their surface finishes is uniformly high. And they are available with either pin-type or cast-bronze, land-riding cages.

These advantages, plus controlled lubrication, mean free-rolling service, long life and minimum maintenance attention under virtually any operating conditions.

TORRINGTON two-row Tapered Roller Bearings like the four-row Tapered Roller Bearings and Spherical Roller Bearings offer one of the surest, most economical ways to roll higher tonnage records *consistently*.

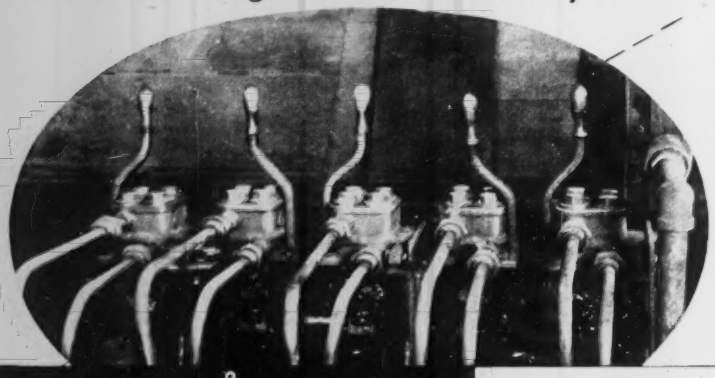
And tonnage records are the test of any roll-neck bearing. So next time specify TORRINGTON!

THE TORRINGTON COMPANY
South Bend 21, Ind. Torrington, Conn.

TORRINGTON BEARINGS

Spherical Roller • Needle • Tapered Roller • Straight Roller • Ball • Needle Rollers

You'll have fewer shutdowns due to damaged valve seats if you use



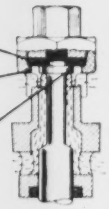
HOMESTEAD
Protected Seat
HYDRAULIC OPERATING VALVES

They give Longer, Low Cost Service

Production stoppages, due to damaged seating elements, are practically eliminated by the exclusive "Protected-Seat" built into every Homestead Hydraulic Operating Valve.

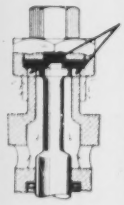
Protection against "wire drawing" or "cutting" of the seat is provided by a closely fitted protecting sleeve and stem shoulder which surround the metal seat and resilient disc in such a way that fluid-flow is all but shut off while the seat face and disc are still widely separated. With velocity thus reduced to almost zero, the most frequent causes of leakage and resultant shutdowns are eliminated. Grit, or other foreign material in the line is usually absorbed by the disc without damage to the valve seat. Records of 18 months continuous maintenance-free service are common.

HERE'S HOW THE PROTECTED SEAT *WORKS*

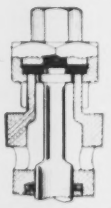


OPEN
Full Flow. Fibre Disc Protected.

Large space to reduce velocity to practically zero. This ring of water is squeezed out in closing—cushions seating.



CLOSING OR OPENING
Flow practically stopped by close fitting sleeve and stem shoulder, before seat and disc make contact. This prevents wire drawing. Trapped water cushions closing.



CLOSED
Protected resilient disc against metal seat assures drop tight performance, long life, accurate control, and low maintenance.

HOMESTEAD VALVE MANUFACTURING COMPANY
"Serving Since 1892"

MAIL THIS COUPON TODAY!
WE'LL SEND YOU FULL PARTICULARS BY RETURN MAIL

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Please send me without obligation, VALVE REFERENCE BOOK No. 39 and complete data on HYDRAULIC OPERATING VALVES.

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COMPANY.....
ADDRESS.....
CITY.....STATE.....

CALENDAR
OF MEETINGS

November 9-12, American Petroleum Institute: Annual meeting. Hotels Conrad Hilton and Palmer House, Chicago. Institute address: 50 W. 50th St., New York 20. Secretary: Lacey Walker.

November 9-12, The Wire Association: Annual convention. La Salle hotel, Chicago. Association address: 453 Main St., Stamford, Conn. Executive secretary: Richard E. Brown.

November 9-12, Refrigeration Equipment Manufacturers Association: Refrigeration & air conditioning exposition. Public auditorium, Cleveland. Information: Banner & Greif, 18 E. 41st St., New York 17.

November 9-13, National Electrical Manufacturers Association: Annual meeting. Haddon Hall, Atlantic City, N. J. Association address: 155 E. 44th St., New York 17. Managing director: W. J. Donald.

November 9-13, Montreal Chapter, American Material Handling Society and Foremen's Club of Montreal: Combined materials handling and tool and equipment show. Show Mart Bldg., Berri Square, Montreal. Information: E. M. Wilcox, Ltd., 4585 Sherbrooke St. W., Montreal, Quebec.

November 12-13, Porcelain Enamel Institute and Building Research Advisory Board: Conference on porcelain enamel in the building industry. National Academy of Sciences, Washington. Information: Building Research Advisory Board, National Research Council, 2101 Constitution Ave. NW, Washington 25.

November 12-13, Industry-College Conference: The Greenbrier, White Sulphur Springs, W. Va. Information: Industry-College Conference: 4500 Chrysler Bldg., New York 17.

November 13-18, National Association of Waste Material Dealers Inc.: Fall meeting. Hollywood Beach hotel, Hollywood-by-the-Sea, Fla. Association address: 271 Madison Ave., New York 16. Managing director: Clinton M. White.

November 15-18, Scientific Apparatus Makers Association: Fall meeting. The Cloister, Sea Island, Ga. Association address: 20 N. Wacker Dr., Chicago 6. Executive vice president: Kenneth Andersen.

November 16-17, American Zinc Institute Inc., Galvanizers Committee: Fall meeting. Netherland Plaza hotel, Cincinnati. Institute address: 60 E. 42nd St., New York 17. Secretary-treasurer: E. V. Gent.

November 16-18, National Association of Corrosion Engineers: Short course on cathodic protection, University of California, Los Angeles. Association address: 1061 M & M Bldg., Houston 2. Executive secretary: A. B. Campbell.

November 17, Armour Research Foundation, Illinois Institute of Technology; and Trade Association Executives Forum of Chicago: Trade association technical conference. Technology Center, Chicago. Information: Illinois Institute of Technology, 35 W. 33rd St., Chicago 16.

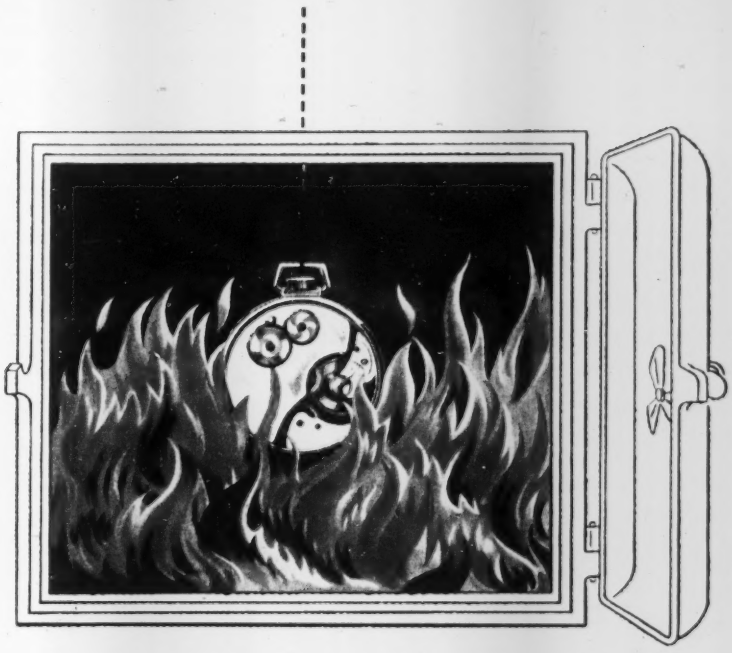
November 17-19, Pittsburgh Business Show: Hotel William Penn, Pittsburgh. Information: R. I. Pontius, Steel City Electric Co., 1297 Columbus Ave., Pittsburgh 33.

November 18-19, National Metal Trades Association: Fall meeting. Hotel Statler, Cleveland. Association address: 122 S. Michigan Ave., Chicago 3. Commissioner: Charles L. Blatchford.

November 18-20, American Institute of Electrical Engineers: Joint AIEE-IRE conference on electronic instrumentation in nucleonics and medicine. Hotel New Yorker, New York. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

November 18-20, Institute on Tool Engineering: University of Wisconsin, Madison, Wis. Information: George R. Sell, Stadium Offices, University of Wisconsin, Madison 6.

November 19, Anti-Friction Bearing Manufacturers Association Inc.: Fall meeting. The Cloister, Sea Island, Ga. Association address: 60 E. 42nd St., New York 17. Secretary: H. O. Smith.



Want to "hang a Watch" in a furnace...and make it run?

Something as technically difficult *is* being done now. For instance, the "buckets" (paddles) and turbine rotor assemblies we make for aircraft jet engines.

These buckets have to stand up against 10,000 revolutions a minute and a flame 1400° hot. Yet, they are made to closer tolerances than many of the parts in your watch and your automobile.

To accomplish this, the Jet Division developed a special technique to finish-forge unusual tougher-than-steel alloys to accurate curves even smoother than glass...with no final machining required! And we helped develop the alloys.

You're probably planning a new product . . . or how to make a present one better, stronger, at lower cost. *Now is the time to call on the Jet Division for recommendations and technical advice.*

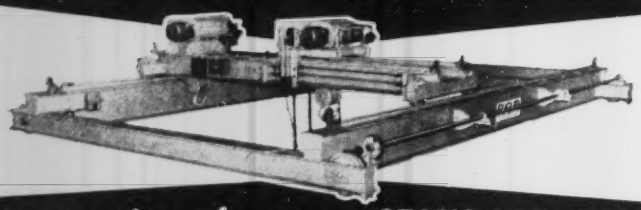
We offer you our experience in making more jet-engine "buckets" and turbine rotors than any other producer.

JET DIVISION

Thompson Products, Inc.

DEPARTMENT JP-111 • CLEVELAND 17, OHIO

EUCLID SPECIAL CRANE



a composite of proven STANDARD UNITS

As a rule a "special" Euclid Crane embodies *standard* hoisting, traveling and control units combined with scientifically engineered bridge, trolley, etc.

The purchaser obtains a crane with a full factor of five, thoroughly tested and proven components, the economy of volume production and the assurance of satisfactory performance due to years of specialized experience.

The above crane has a rigidly mounted hoist and hook; also a hoist and trolley which travels lengthwise of a secondary bridge. This permits convenient and efficient handling of bundled material of various lengths.

EUCLID CRANES AND HOISTS *Raise Profits*

Write us for a recommendation mentioning conventional or special requirements.

THE EUCLID CRANE & HOIST CO.

1365 CHARDON ROAD • EUCLID, OHIO

Geared to Industry's Production Demands Since 1887

MILWAUKEE WROT WASHERS

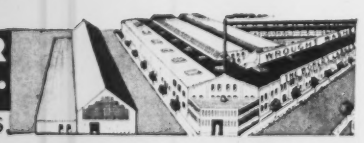
Offering the most complete line of washers available today . . . all types and sizes, all materials, all finishes. More than 25,000 sets of dies. Let us quote on your requirements.

WASHERS STAMPINGS

WROUGHT WASHER MANUFACTURING CO.

The World's Largest Producer of Washers

2103 S. BAY ST., MILWAUKEE 7, WIS.



A 7511-½

November 19-20, National Association of Corrosion Engineers, Western Region: Annual conference, Hotel Biltmore, Los Angeles. Association address: 1061 M & M Bldg., Houston 2. Executive secretary: A. B Campbell.

November 20, Association of American Railroads: Annual meeting, Blackstone hotel, Chicago. Association address: Transportation Bldg., Washington 6. Secretary: G. M. Campbell.

November 30-December 1, American Management Association: Special supervisory conference, Palmer House, Chicago. Association address: 330 W. 42nd St., New York 36. President: Lawrence A. Appley.

November 30-December 3, American Institute of Steel Construction Inc.: Annual convention, Boca Raton hotel and club, Boca Raton, Fla. Institute address: 101 Park Ave., New York 17. Secretary: M. Harvey Smedley.

November 30-Dec. 5, Exposition of Chemical Industries: Commercial Museum and Convention Hall, Philadelphia. Information: Charles F. Roth, 24th Exposition of Chemical Industries, 480 Lexington Ave., New York.

December 1, Spring Manufacturers Association: Annual meeting, Biltmore hotel, New York. Association address: 249 Main St., Bristol, Conn. Secretary: George E. Underwood.

December 2-4, American Institute of Mining & Metallurgical Engineers: Annual electric furnace steel conference, Netherland Plaza hotel, Cincinnati. Institute address: 29 W. 39th St., New York 18. Secretary: Edward H. Roble.

December 2-4, Society for Experimental Stress Analysis: Annual meeting, Hotel McAlpin, New York. Society address: P.O. Box 168, Cambridge 39, Mass. Secretary: W. M. Murray.

December 2-4, Mid-Century Conference on Resources for the Future: Washington. Information: Norvell W. Page, conference director, Resources For The Future Inc., 504 Stoneleigh Court, 1025 Connecticut Ave. NW, Washington.

December 3, American Iron & Steel Institute: Philadelphia regional technical meeting Warwick hotel, Philadelphia. Institute address: 350 Fifth Ave., New York 1. Secretary: George S. Rose.

December 3-4, Society of the Plastics Industry Inc.: Film, sheeting and coated fabrics division conference, Hotel Commodore, New York. Society address: 67 W. 44th St., New York 36. Executive vice president: William T. Cruse.

December 5, American Electroplaters' Society: Research committee conference, Statler hotel, Detroit. Society address: 445 Broad St., Newark 2, N. J. Executive secretary: P. Peter Kovatis.

December 7-10, Scientific Apparatus Makers Association: Midyear meeting, laboratory apparatus, equipment and optical sections, Boca Raton Club, Boca Raton, Fla. Association address: 20 N. Wacker Dr., Chicago 6. Executive vice president: Kenneth Andersen.

December 8-10, American Institute of Electrical Engineers: AIEE-ACM-IRE Eastern computer conference, Statler hotel, Washington. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

December 9, Steel Kitchen Cabinet Manufacturers Association: Winter meeting, Edgewater Beach hotel, Chicago. Association address: 1008 Engineers Bldg., Cleveland. Executive secretary: Arthur J. Tuscany Jr.

December 13-16, American Institute of Chemical Engineers: Annual meeting, Hotel Jefferson, St. Louis. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

December 16-18, Material Handling Institute: Annual meeting, Hotel Statler, New York. Institute address: 813 Clark Bldg., Pittsburgh 22. Managing director: R. K. Hanson.

December 29, American Association for the Advancement of Science: Panel discussion on visual performance and testing procedures, Bradford hotel, Boston. Panel chairman: Dr. N. Franklin Stump, Bausch & Lomb Optical Co., 635 St. Paul St., Rochester 2 N. Y.

H. J.
Here's a really fantastic letter!
P.W.

BANNER TOOL COMPANY

BANNER TOOLS DETROIT — *Fine* TOOLS FOR INDUSTRY

17243 FILER AVENUE - TWINBROOK 2-4900

DETROIT 12, MICHIGAN

June 16, 1952

Cities Service Oil Co.,
3049 E. Grand Blvd.,
Detroit 2, Michigan
Attention: Mr. P. E. Watts

Dear Sirs:

We called upon the services of your lubrication engineer, Mr. A. J. Blake, in reference to a serious staining condition which we were having with our soluble oil. He analyzed this condition and recommended one of your Chillo Oils. This oil was tried and the rust condition eliminated to our satisfaction.

To our surprise on his next visit he was dissatisfied with our tool life and suggested we use a soluble oil called "Chillo A". Now not only do we have clean machines, but tool life has been increased 20%! While in our plant he asked permission to "look around", which, of course, was granted.

We were using a tapping compound with precision ground taps in order to hold to close tolerances. We did not consider tap breakage excessive but the removal of broken taps was sometimes rather expensive. He recommended we use "Chillo 10Z". Then came the surprise of our lives! With Chillo 10Z we have gone to commercial ground taps (a 300% savings) and can still hold our same tolerances, with a sharper thread, increasing tap life a minimum of 20% plus eliminating expensive removal of broken taps!

We also have a production stamping job which required a new set of dies every month. On his recommendation we tried Chillo 10Z with these dies. Now our die life has increased to at least two months...a saving in die life of 100%, disregarding labor costs. We also increased production 200% per die sharpening!

We tried the same oil on our broaching operation and found that instead of making two cuts we can get the same results now with one. We were using one of your competitors' hydraulic oils and you told us it was a "good oil" and would give us satisfactory performance. BUT, GENTLEMEN, WITH THE EXCELLENT SERVICE YOU HAVE GIVEN, PLUS THE TIME AND MONEY SAVED, YOU MAY REST ASSURED THAT ALL OF OUR LUBRICATING REQUIREMENTS WILL BE PURCHASED FROM YOU.

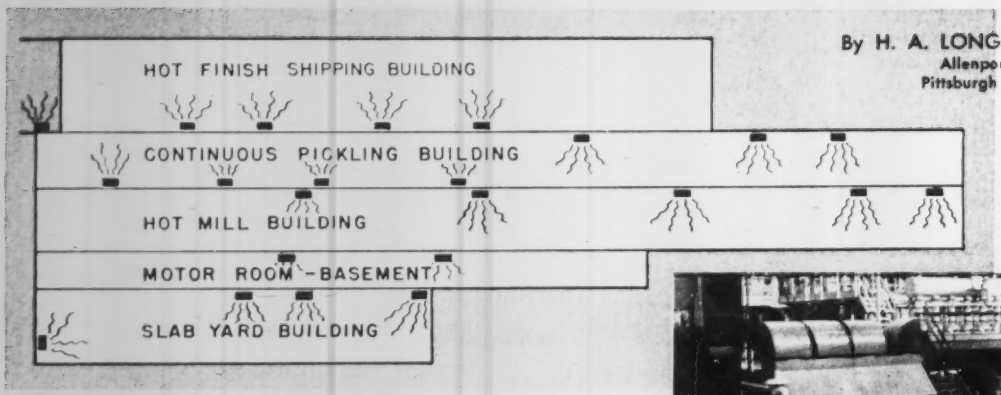
Yours very truly,

BANNER TOOL COMPANY

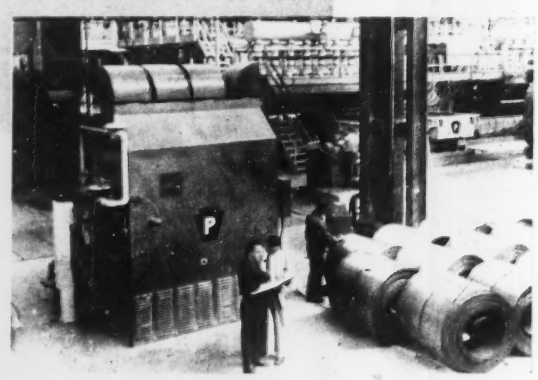
S. F. Olesak

S. F. OLESAK

SFO:sd



Floor plan shows how heaters were spaced according to specifications. Positioning heaters along column lines, as in the photo, prevents controls being damaged by handling equipment



Warming Cold Spots In Hot Mill . . .

By H. A. LONG, *Chief Engineer*
Allenport Plant
Pittsburgh Steel Co.

High output space heaters in Pittsburgh Steel's Allenport mill make working temperatures comfortable. Zone thermostats adjust for hot and cold areas

REALIZING that workers can't perform at peak efficiency when cold or wearing heavy clothing to keep warm, Pittsburgh Steel Co. designed into its new Allenport plant a heating system that eliminates cold spots in the hot mill.

Building itself is 1200 feet long, 80 feet wide and 48 feet high to lower chord of the roof truss. In the past, little consideration was given the idea of space heating because mills give off so much waste heat. Not only did personnel suffer, but equipment too when mills had to shut down in mid winter.

Boilers Out—Using existing boiler plant for heat was impossible because its entire capacity was needed for process steam. Building a special new boiler for heating purposes could not be justified, so the company turned to direct-fired space heaters.

Several conditions had to be fulfilled by the space heaters selected. These were: They must supply even temperature automatically through zone thermostat control; give instant heat without long preheat period; be capable of throwing heat 100 feet or more over the heads of workers so no drafts prevail; be designed so exhaust stacks could be located near outside walls or inner supporting columns; and be equipped with combination burners for use with oil when gas was unavailable.

60 Heaters—After carefully computing heat requirements for entire building, 60 Counterflo heaters built by Dravo were ordered. In locating the heaters, design engineers took advantage of their ability to throw a blanket of heat into a large open area.

This feature permitted locating the heaters along the outside building walls, or, in some cases, adjacent to the inner roof supporting columns. Vents for exhaust fumes could thus be run up through the roof without interferring with the overhead cranes that operate in the working areas.

Zone Temperatures—By using these large output capacity heaters, space heating layout called for a minimum of heaters to meet the desired zone temperature requirements for each working area. For instance, design temperature for the hot finish shipping room, pickling building and a large part of the cold reduction mill is from zero to 65° F. But in areas equipped with standby heat only, design temperature is from zero to 35° F.

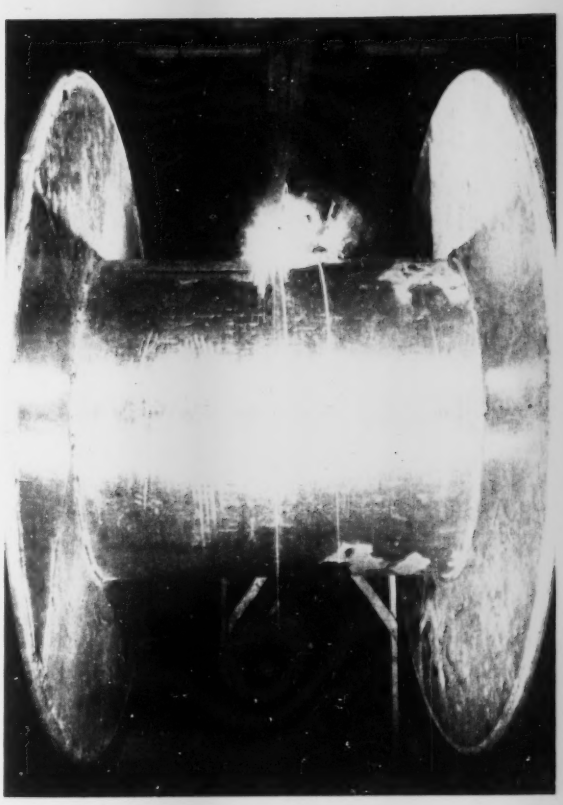
Fuel distribution system lines for both gas and oil presented no problem. Lines are supported along the building columns with downcomers running to each heater. Natural gas is distributed at 25 psi to take advantage of the smaller diameter distribution piping. At each heater, pressure is reduced through two stages to the 4-ounce pressure required at the heater burner. Fuel oil is continuously circulated from central storage.

Advantages—Being completely automatic, there is no need for full or part time operators. Heaters function in accordance with temperature setting of the particular zone thermostat controlling its operation.

One feature not given much consideration at the time of purchase, but which has proved to be a valuable asset, was the use of heater fans for ventilation during hot summer months. Each unit is capable of circulating 22,000 cfm of air.

Giant Aluminum Reels Pose No Problems . . .

Fabricating tricks and sigma welding turn heavy aluminum plate into Navy minesweeper cable reels that are lighter and less cumbersome. Meet nonmagnetic requirements, too



BIG REASON for the vastly speeded-up production of nonmagnetic equipment for the Navy's minesweeper program is the inert gas shielded metal arc welding process. Its use on aluminum, silicon bronze, stainless steel and monel makes these metals practical as substitutes for wood.

One of the bigger fabrication jobs in the program is that tackled by Combined Equipment Co. Inc., Catskill, N. Y. They're welding the all-aluminum reels and spool used to control and store the acoustic and magnetic minesweeping cables, the necessary mounting frames and the drive and control equipment. Some 2000 pounds of wrought aluminum plate and structural shapes and 50 pounds of filler wire go into each shipset of reels.

Procedure—Flange for the large reel seen in the photo above is made by welding together a large and small section of ¼-inch thick 61S-T6 aluminum plate to get the required diameter of 11¼ feet. Before the two sections are welded, a central hole is cut in the larger plate, off center, with a fly cutter so that after it is welded to the smaller plate, hole will be in the center of the flange. Hole is also used as a guide for circumference of the flange.

The cast aluminum hub is then put into the center hole, and the pipe edge of the flange is formed in two halves and placed in position. Channel sections are precut and are placed like spokes around the flange between hub and pipe edge. Special feature of the concrete and steel jig is the hold-down fixture which keeps hub securely in place and also provides a means of clamping pipe edge to flange plate.

Manual Welding—All welds are ¼-inch fillets and are made with manual Aircomatic guns. Channel to flange edge welds are made first on one side and then turned over and the weld between flange edge and flange plate is completed.

Plate for one-half of the drum is purchased to size and tooled to form the drum half. Drum half is positioned against the flange and held in place by gussets that are tacked to the flange. A rolled angle is welded inside the drum against the flange as an additional strength member. Backing strip for the longitudinal seam, to be welded later, is placed on the in-

Reel flanges are welded on this special jig, then a half-drum section is welded to each flange. Two such assemblies form an 11¼-foot reel, top

THE BATH PROCESS is unexcelled for controlled stretching and forming metal to required contours. This new technique of stretch forming has an endless variety of applications, chief among which are parts for jet engines, guided missiles, aircraft framing components, truck, trailer and tractor parts and a great many more. Advantages? Here are but a few:

1. The **BATH PROCESS** forms parts no other machine can duplicate.
2. The saving in time, labor and expensive material is often staggering when compared to methods that require secondary operations and a number of sections welded together.
3. Compound curves and hard-to-form alloys can be worked in a fraction of the time and cost of machined castings or forgings and **can be held to machining tolerances.**

Many manufacturers have used the **BATH PROCESS** and have discovered immediate savings and improved product construction. The **BATH PROCESS,** with its outstanding time and money saving advantages is available to you. **Write TODAY for these FREE Bulletins** or send prints of your requirements and we'll gladly quote.

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Gentlemen:
Please send without obligating me in any way, your free catalogue on

☐ Radial Draw Forming (CF-392) ☐ Contract Forming (CF-760)

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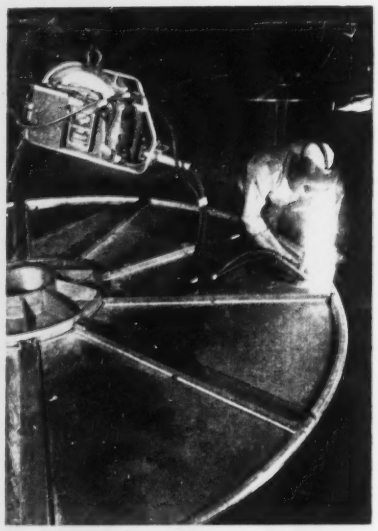


Aircomatic unit is suspended from a work boom which swings across the jig. Welder lays down ¼-inch fillet between flange plate and pipe edge

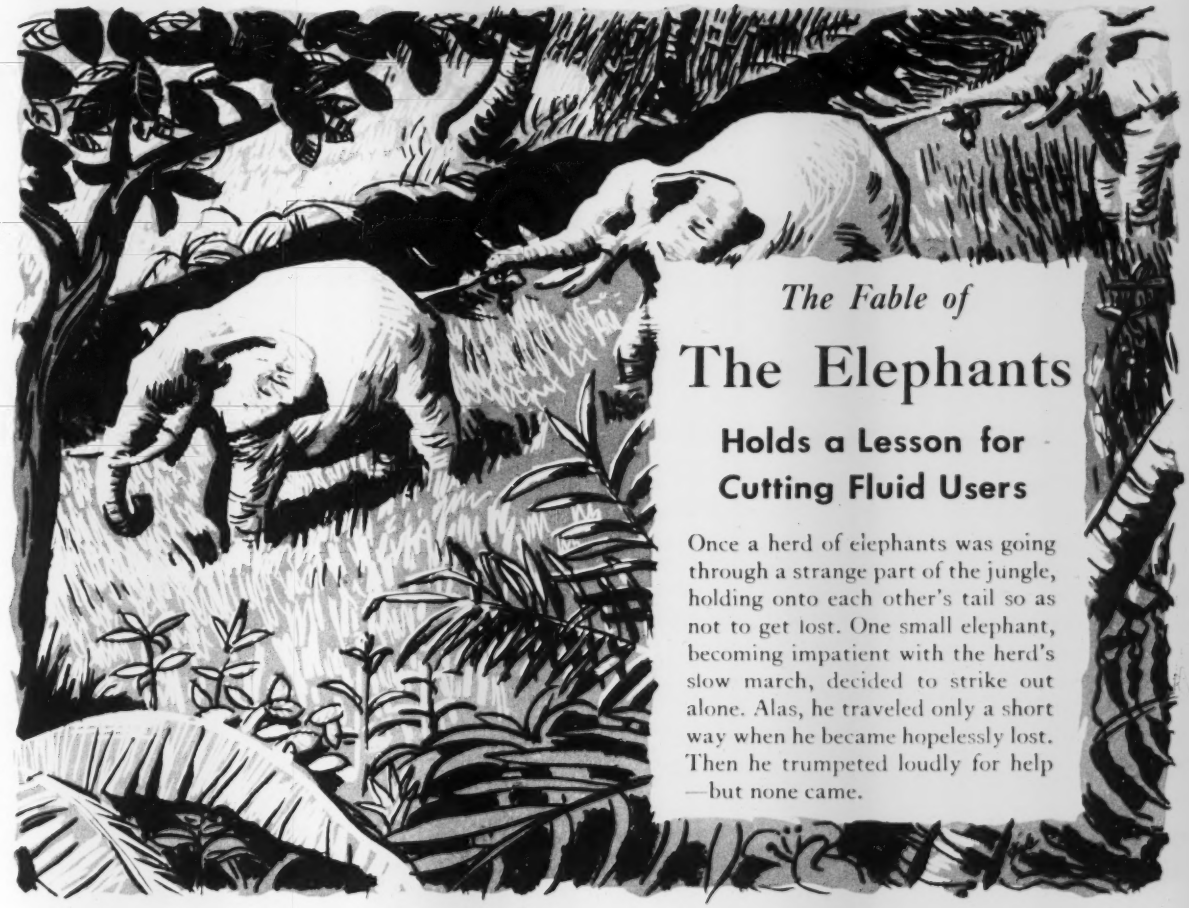
side of the drum half adjacent to the ground clamp. This strip is ¼ inch thick by 1 inch wide 61S-T6 plate cut to the length of the gussets and tack welded on one side.

Joining Sections—Four gussets spaced 90 degrees apart and positioned directly over the channel sections of the flange are then welded to the flange and drum. Next, a rolled channel stiffener is inserted to serve as a backing strip for the butt welding of the two hub halves together.

After the bronze drive gear is bolted to one half of the hub on the outside, the nuts are welded to the inside of the flange. Two halves are then assembled on the axle, with the rolled channel serving to line up the spool halves and acting as a backup bar, spacer and strengthener. Assembled unit is placed in jig and the circumferential seam is welded, then the two longitudinal seams.

Finishing Up—Final operations provide for a recessed portion in the hub where an "eye" will hold the end of the cable. After vent and drain holes are drilled in the proper spots, reel is primed with zinc chromate prior to shipment.

Smaller reels are made in much the same manner as the large ones except that plate stiffeners are used on the flange instead of channel sections.



The Fable of

The Elephants

Holds a Lesson for Cutting Fluid Users

Once a herd of elephants was going through a strange part of the jungle, holding onto each other's tail so as not to get lost. One small elephant, becoming impatient with the herd's slow march, decided to strike out alone. Alas, he traveled only a short way when he became hopelessly lost. Then he trumpeted loudly for help —but none came.

The Lesson:

Like the little elephant in the fable, it is easy to get lost in the cutting fluid jungle. You need something to follow if you are to stay out of trouble. Realizing this, Stuart Oil has devised a unique Selector to serve as a guidepost to point out the path to the right cutting fluid. The Selector recommends cutting and grinding fluids which field experience has shown to be most suitable under average job conditions. Machinability ratings are listed, and complete instructions are given. Included are rules of thumb to follow when short tool life and poor surface finish are encountered.

To make going astray even more difficult, Stuart has developed the Dilut-O-Graph which tells how much cutting oil is required for a certain dilution when blending is done in tanks of different capacities. The Dilut-O-Graph ends costly guess-work.

Your Stuart Oil Representative will gladly give you a Selector and Dilut-O-Graph. And while he is in your plant, ask him to show you how Stuart cutting and grinding fluids will improve your machining results.

FREE CUTTING FLUID SELECTOR AND DILUT-O-GRAPH

In this folder is Stuart's Cutting Fluid Selector and Dilut-O-Graph. They are double-barreled protection against mistakes in selecting and preparing cutting fluids. Instructions are included. Fill out and mail coupon.

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Remember . . . your truck is no better than its power. It PAYS to convert present electric trucks to Ready-Power . . . and it PAYS to specify Ready-Power when buying new trucks.

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Manufacturers of Gas and Diesel Engine-Driven Generators and Air Conditioning Units, Gas and Diesel Electric Power Units for Industrial Trucks

Die Cast Heater Elements

CASTING of U-shaped calrod units as inserts in aluminum alloy heater elements eliminates the danger of fire, electrical shock or burns in the line of portable and wall heaters produced by Electromode Corp., Rochester, N. Y. In addition, the company says it has achieved savings by specifying die casting of interchangeable heater elements in aluminum.

Decision to die cast these elements was based on possible reductions in weight and costs, fewer secondary operations, better finish and heat distribution.

Results—Heating elements for the company's Down-Flo Heater, die cast by Precision Castings Co. Inc., Fayetteville, N. Y., show a 52 per cent cost reduction over previous units. Weight of the elements shown here has been reduced from 8 pounds, 4 ounces to 5 pounds, 4 ounces, a saving of 3 pounds per casting.

Wall thickness of the 31 fins has been cut in half. Mounting bosses required at each end of the sand casting are eliminated, replaced by four rectangular lugs formed between the outer fins, cast to finished size to mate with punched holes in the sheet metal heater frame. Thus, when the two halves of the frame are fastened together, the heating element is rigidly suspended between them. No screws or other mounting devices are necessary.

Heat Distribution—High heat conductivity of aluminum alloy, combined with smoother, thinner fins has also improved heat distribution.

Company's conclusion was this: A pattern for low cost production of effective multi-fin heating elements requiring a minimum of secondary operations.

Revised Cutoff Wheel Manual

Norton Co., Worcester, Mass., has revised its 36-page manual, giving information on abrasive cutoff wheels, their selection, application and use. Included are wheel selection tables and conversion of wheel speeds to feet per minute values. The company offers the manual without charge.

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AT HIGH STANDARD

(THE HIGH STANDARD MANUFACTURING CORPORATION, HAMDEN, CONNECTICUT)

Manufacturers of Sporting Fire Arms

WITH Delpark FILTERS

In this business of fighting increasing costs . . . the production of machines, particularly grinders, gets a long look . . . for its here that operational costs *can* be reduced. Even when rejections are low and machine efficiency high—it's a good bet that Delpark Filtration can pull the rejection rate much lower and push that machine to near absolute efficiency.

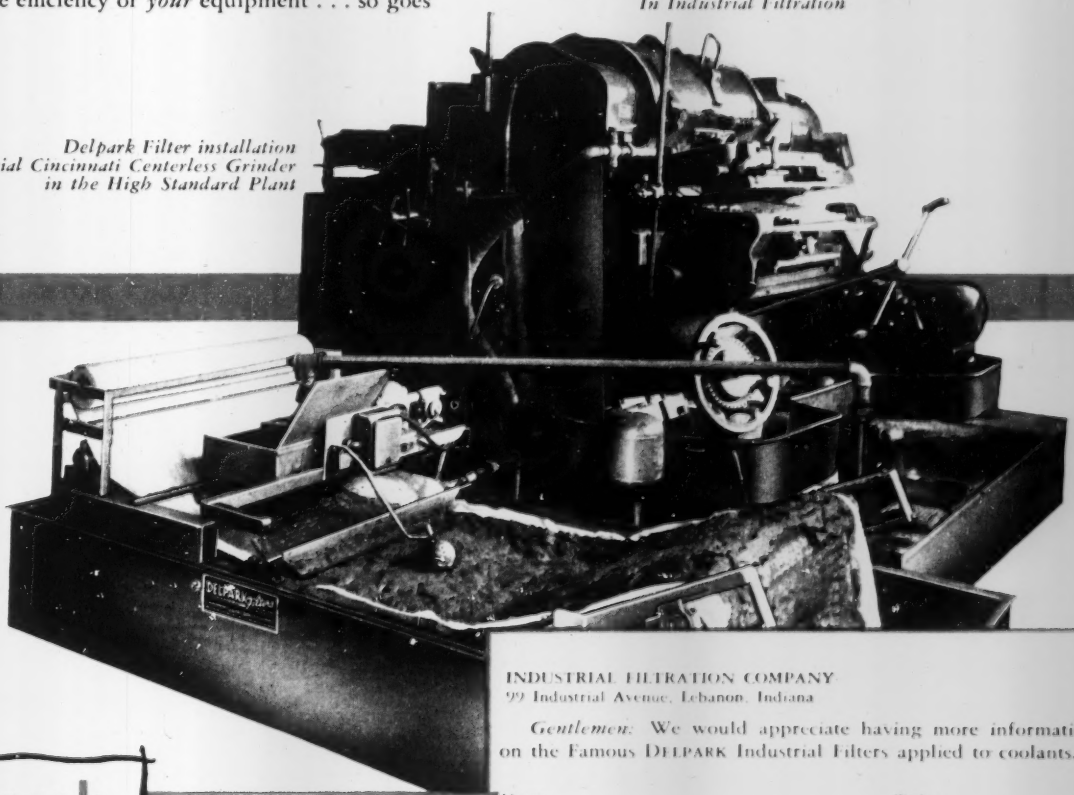
It's an equally good point to remember that so goes the efficiency of *your* equipment . . . so goes the profit on *your* ledger. It's an extra good point to remember, too, that numerous case histories show Delpark Filters consistently amortize themselves in less than a year.

Let us tell you the complete story on what Delpark Filtration can do for your plant. Write for more complete information.

DELPARK INDUSTRIAL FILTRATION

Backed By More Than 30 Years Experience In Industrial Filtration

Delpark Filter installation on Special Cincinnati Centerless Grinder in the High Standard Plant



Delpark INDUSTRIAL FILTRATION

INDUSTRIAL FILTRATION COMPANY
99 Industrial Avenue, Lebanon, Indiana

Gentlemen: We would appreciate having more information on the Famous DELPARK Industrial Filters applied to coolants.

Name ..... *Title* .....

Company .....

Address .....

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Hardsurfacing Technique

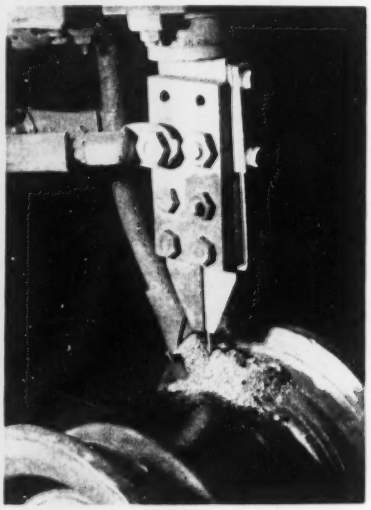
Alloy content of deposited metal is supplied by agglomerated granular flux

TECHNIQUE for automatic hardsurfacing, in which the alloy content of deposited metal is supplied by an agglomerated granular flux rather than by the electrode is announced by Lincoln Electric Co., Cleveland. These fluxes are an addition to the company's line of fluxes for hidden arc welding.

It is possible to apply automatic hardsurfacing with conventional mild steel electrode simply by substituting for the mild steel flux normally used this hardsurfacing flux. Any standard automatic welding head or manual Lincolnweld equipment may be used without any changes; all the characteristics of hidden arc welding, such as uniform feeding and exact arc control are retained.

Tailor-Made Deposit — In addition it is possible to tailor-make hardsurfacing deposit. By diluting the hardsurfacing flux with mild steel flux, hardsurfacing properties can be matched exactly to service requirements. Exact control over hardsurfaced materials permits economies in application and service results.

The company has marketed two hardsurfacing fluxes. Flux H-545 is to be used whenever a smooth layer of good abrasion resistance and high impact strength is required. It is used for deposits to be forged, such as plow share blanks; for metal to metal wear, such as tractor rollers or crane wheels; or for smooth deposits without porosity and underbead cracking, such as steel mill roughing rolls which do not require machining. The weld metal is an alloy of carbon, manganese, silicon.



EXACT MATERIAL CONTROL
. . . with any standard head

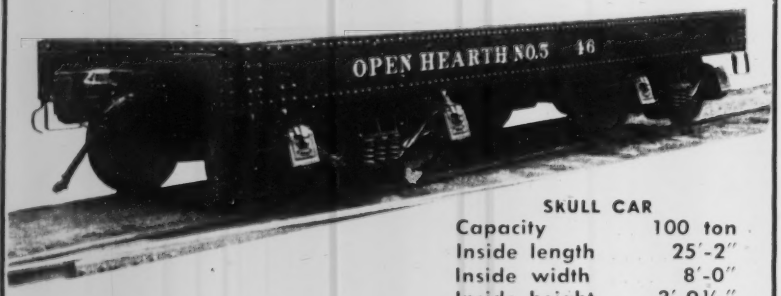
chromium, molybdenum and vanadium. Deposit is magnetic at room temperature and with recommended procedures has a consistent hardness of 53-57 Rockwell C.

Abrasion-Resistant—Flux H-550 is used for extremely abrasion resistant deposits with good impact strength, such as crusher rolls, crusher liners, scraper blades.

This weld metal is an alloy of carbon, manganese, silicon chromium and molybdenum. Deposit is magnetic (semi-austenitic at room temperature and with recommended procedures has a consistent hardness. A broad range of 36-62 Rockwell C hardness can be developed. Deposit is nonmachinable.

GREENVILLE STEEL CARS

from any angle



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Capacity	100 ton
Inside length	25'-2"
Inside width	8'-0"
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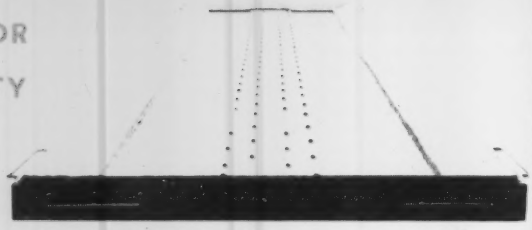

Mill type cars are designed with a specific use in mind and are constructed with the same superior workmanship that goes into the construction of any standard freight car. To get the right car for the right job, Greenville engineers will be glad to analyze your requirements for cars in mill service and produce a rugged car that will stay on the job for years to come—and save you money with every turn of the wheels. Ask for our catalog.

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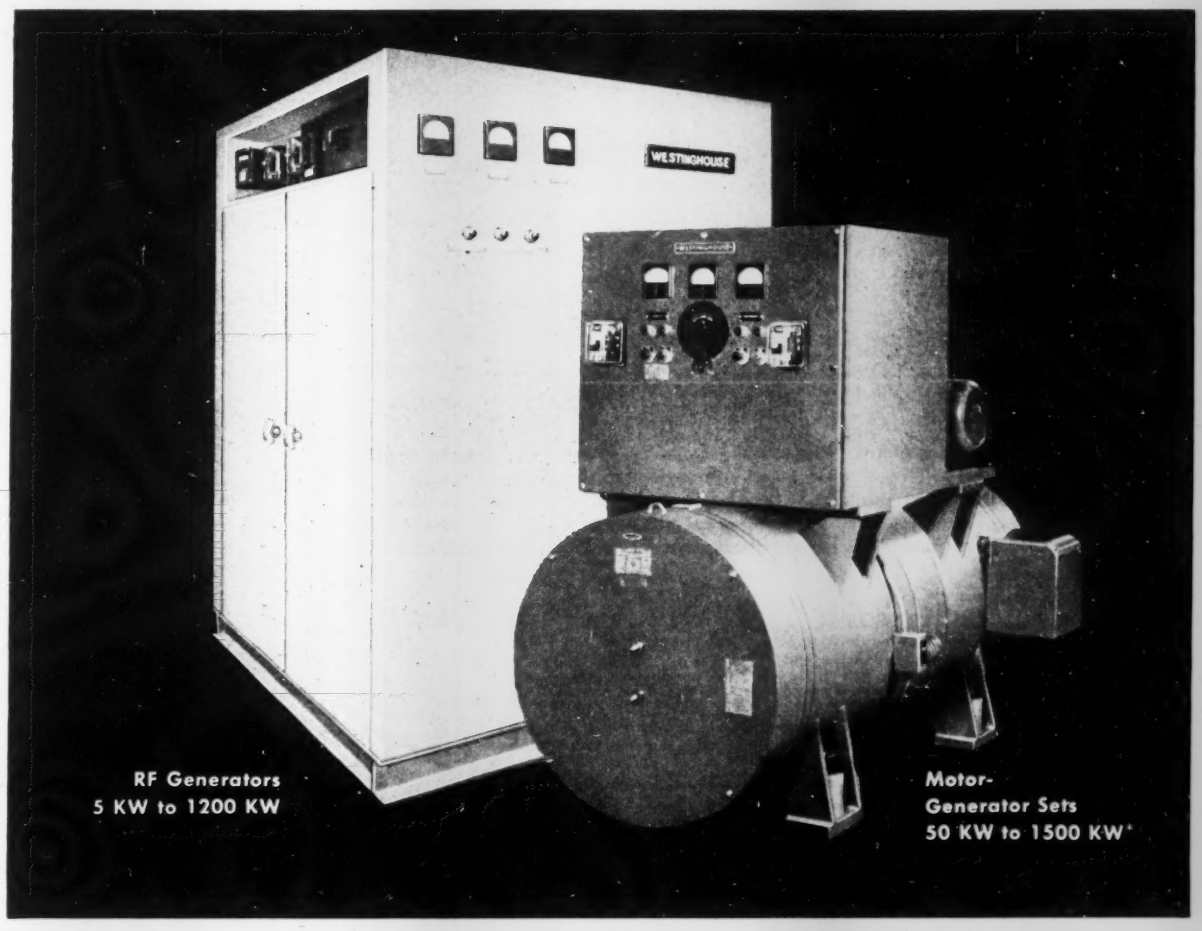
GREENVILLE, PENNSYLVANIA

(SUBSIDIARY OF PITTSBURGH FORGINGS COMPANY)



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America's Best Looking Cap Screw

Made of high carbon steel — AISI C-1038 — to standards for Full Finished hexagon head cap screws — bright finish. Heads machined top and bottom. Hexagon faces clean cut, smooth and true, mirror finish. Tensile strength 95,000-110,000 p.s.i. Carried in stock.

"HI-CARBS"

Heat Treated Black Satin Finish

Made of high carbon steel — AISI C-1038. Furnished with black satin finish due to double heat treatment. Hexagon heads die made, not machined. Points machine turned; flat and chamfered. Tensile strength 130,000-160,000 p.s.i. Carried in stock.

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Made of AISI C-1018 steel—bright finish. For use where heat treatment is not required and where ordinary hexagon heads are satisfactory. Hexagon heads die made to size — not machined. Points machine turned. Tensile strength 75,000-95,000 p.s.i. Carried in stock.

SET SCREWS

Square head and headless — cup point. Case hardened. Expertly made by the pioneers in producing Cup Point Set Screws by the cold upset process. Cup points machine turned. Carried in stock.

FILLISTER CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

FLAT HEAD CAP SCREWS

Heads completely machined top and bottom. Milled slots — less burrs. Flat and chamfered machined point. Carried in stock.

"SHINYLAND" STUDS

All studs made steam-tight on tap end unless otherwise specified, with flat and chamfered machined point. Nut end, oval point. Land between threads shiny, bright, mirror finish. Carried in stock.

ADJUSTING SCREWS

Valve tappet adjusting screws — Hexagon head style — to blue print specifications—hexagon head hard; polished if specified — threads soft to close tolerance — points machine turned; flat and chamfered.

CONNECTING ROD BOLTS

Made of alloy steel — heat treated — threads rolled or cut — finished to extremely close thread and body tolerances — body ground where specified. Expertly made by the pioneers in producing connecting rod bolts by the cold upset process.

SPRING BOLTS

Case hardened to proper depth and ground to close tolerances. Thread end annealed. Supplied in various head shapes, with oil holes and grooves of different kinds, and flats accurately milled.

FERRY PATENTED ACORN NUTS

For ornamental purposes. Steel insert — steel covered. Finish: plain, zinc plated, cadmium plated. Size: 9/16", 3/4", 15/16" across the flats.

Tapped 1/4" to 3/4" inclusive. Cross section of Ferry patented acorn nut, showing how steel hexagon nut fits snugly into shell.

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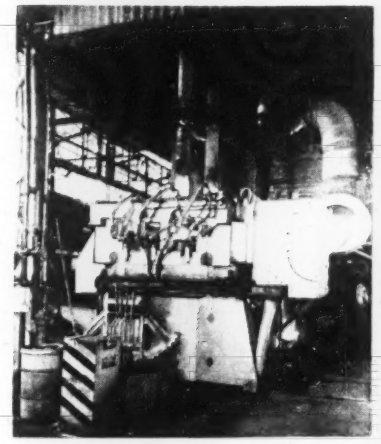


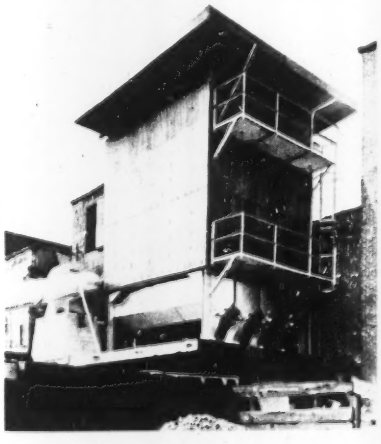
Duct that draws smoke, dust and fumes to bag house is adjacent to furnace

Clean Air for Foundry

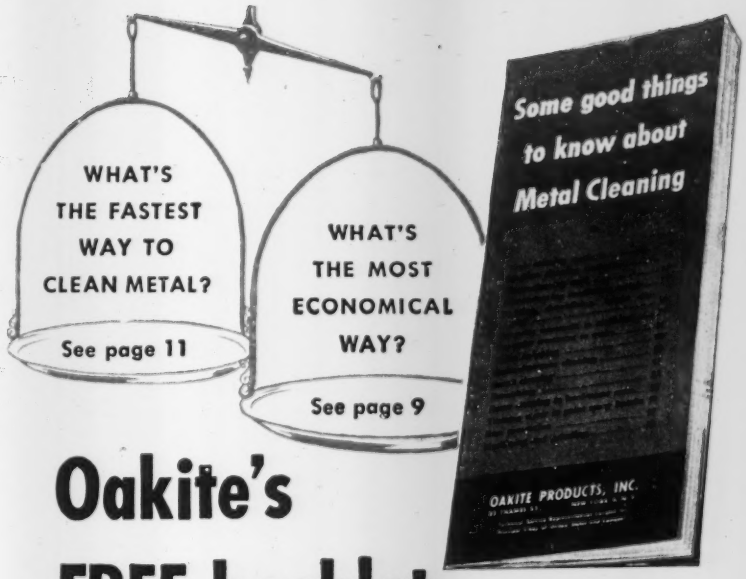
CLEAN, dust-free air inside the foundry is being achieved by Chicago Steel Foundry Co., Chicago, through use of a fibrous glass, bag-type suppressor installation, reported to be the first of this type to be used in the Midwest with electric furnace operation.

Removing impurities from air has long been a major foundry goal. The immediate benefit at Chicago Steel is improved working conditions. A longer range view will include the obvious stimulus to production and a more stable working force.

Vacuum Cleaner Principle—Both the suppressor and the Hydro-Arc electric furnace are products of Whiting Corp., Harvey, Ill. This suppressor operates during all



Dust and fume suppressor's bag house is located outside foundry building


WHAT'S THE FASTEST WAY TO CLEAN METAL?
See page 11
WHAT'S THE MOST ECONOMICAL WAY?
See page 9
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three stages of charging, melting and tapping. Gases are drawn from the furnace area through ducts to the bag house located outside the foundry. Here the bags utilize the vacuum cleaner principle to remove smoke, dust and fumes.

Construction of the bags enables them to withstand temperatures up to 500° F without loss of efficiency. Water cooling is unnecessary and shakeout of bags is done manually.

Vinyl-to-Metal Bond

The process provides for 180-degree bends and deep draws without separation

METHOD of laminating vinyl plastic and sheet steel or aluminum which will make these metals colorful, decorative and permanently rust and corrosion proof has been developed by Naugatuck Chemical Division, United States Rubber Co. The process combines the structural strength of metal with the bright colors and exceptional corrosion resistance of vinyl plastic.

Method consists of bonding Marvinol, the company's vinyl, to sheet steel or aluminum. Result called Marvinol-metal laminate, has a higher abrasion resistance than varnish, paint and baked enamel finishes, reports the manufacturer. In addition, the bond of plastic to metal is so strong that 180-degree bends and deep draws can be made without separating the vinyl from the metal.

Special Adhesive—The laminate is made by rolling rigid or semi-rigid vinyl sheet onto heated adhesive-coated metal sheets or strips. Rolling presssure is not high. After rolling, adhesion is effected in seconds under heat lamps or another suitable heat source. Secret of the process lies in a special adhesive, and in proper preparation of the metal and the vinyl plastic compound.

It is a process which can be adapted easily to high speed production for fabricating either continuous rolls or individual panels reports the division. To date cold-rolled steel, hot-rolled pickled steel and aluminum from 18 to 34 gage have been used to make the laminate. Vinyl films used range

the facts IN THIS NEW BROCHURE

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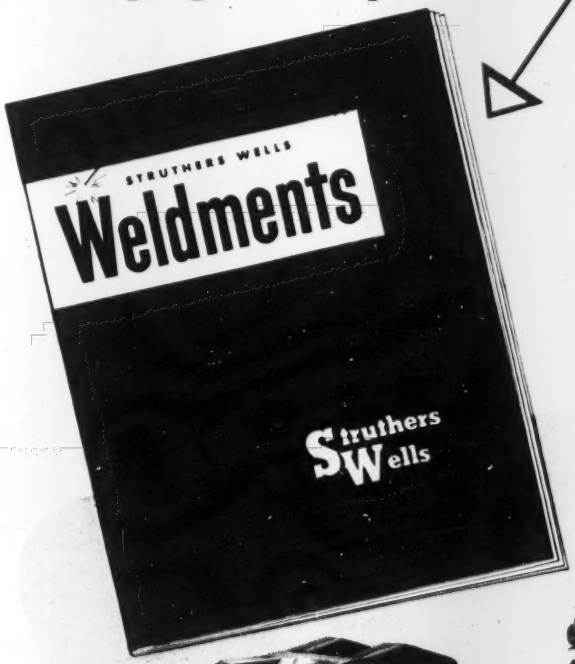
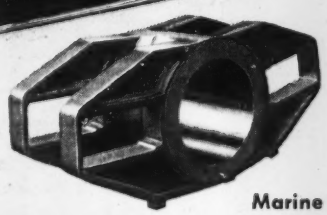
A potential guide to real profits for you, this new 16-page brochure stresses the advantages of using steel weldments, and outlines why STRUTHERS WELLS—through equipment and experience—is your logical source of supply. A technical section compares the properties of steel and cast iron, presents general data on weldability of ferrous metals, and includes many definitions of interest concerning weldments. May we send you a copy?

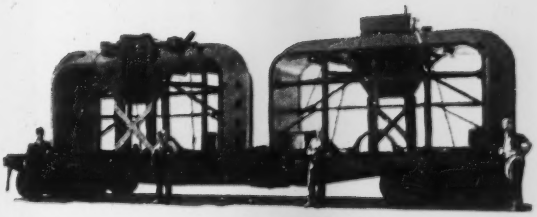


Representative Weldments by Struthers Wells

Vessel Weldment

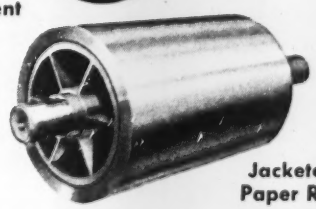


Marine Tiller

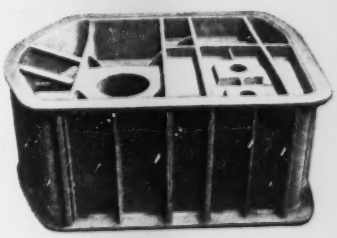


Large Turbine Base

Fabricated Pipe Weldment



Jacketed Paper Roll



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Corrosion—In a series of corrosion tests, laminated panels have been left outdoors in an industrial atmosphere for two years without breakdown. Ducting made from the laminate has carried sulphuric and nitric acid fumes for a year without deterioration.

In other tests, panels have been exposed to 100 per cent humidity at 160° F for 1000 hours without adhesion failure or blistering and with only slight color changes. Oven aging at 150° F for 600 hours had no perceptible effect on adhesion or color.

Protection by Immersion

Developments in rust-proofing ferrous metals by low-cost chemical immersion methods now give promise of achieving standard salt-spray test ratings for effectiveness hitherto attained only in the field of electro-plating.

After several years' use in commercial production and comparative tests by Ordnance and private laboratories, Rust-Proofing & Metal Finishing Corp., Cambridge, Mass., has announced a new chemical treatment for iron and steel articles. Products treated by this process are reported to withstand standard salt-spray tests from 12-times to 24-times as many hours as those treated by standard phosphate-coating methods.

Called Endurion, the immersion treatment can now be applied in integral colors ranging from gray and black through blue, green and olive drab.

Reduce Maintenance

HOT STRIP RUN-OUT TABLE

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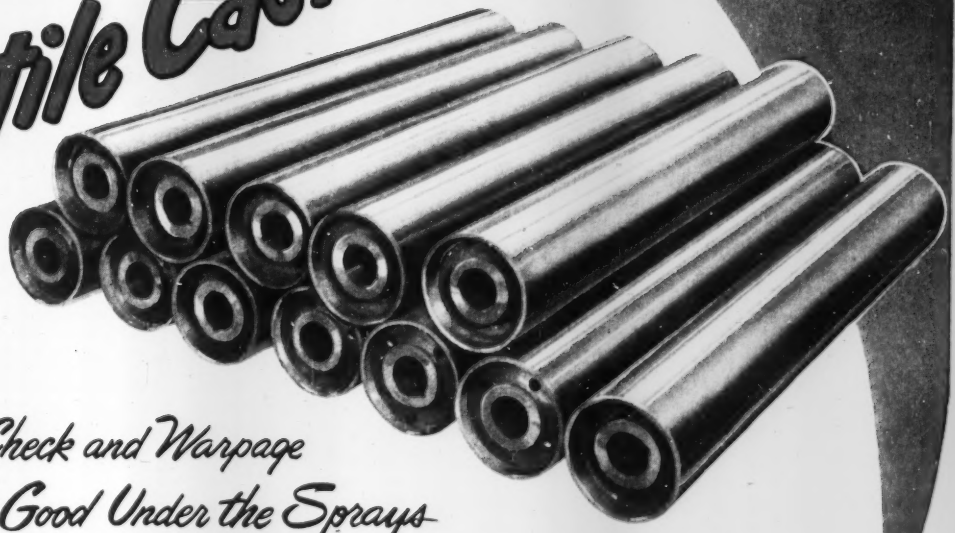

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12

Plastic Core Wire Rope

Need for more durable core material answered with polyvinyl. Advantages mount up

SEARCH for more durable materials to replace fiber core wire rope used in drilling oil and gas wells has resulted in the development of a plastic core.

PlastiKore wire rope, product of Jones & Laughlin Steel Corp., Pittsburgh, is available in diameters ranging from ⅜ inch to several inches. Cores, made of polyvinyl, may be surrounded by from three to eight steel strands. Strands, in turn, may be made up of 7, 19, 25 or 41 steel wires.

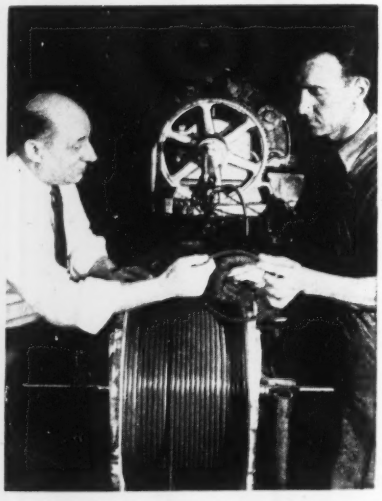
Ability to stand up under adverse drilling conditions is coupled with the advantage that the plastic core is made in this country. Fiber for hemp cores is imported.

Comparison—Resiliency is the function of the core: It gives outer steel strands under shock and longitudinal strain something to bounce against as they are drawn toward the center. Plastic compares favorably with fiber in this role.

Plastic is not affected by moisture. Hemp in the fiber core, however, needs a small amount of moisture to keep its resilience. Excessive moisture promotes growth of fungus in the hemp.

Plastic core is not affected by acids, caustics and other destructive substances found in many wells. Material also maintains its resiliency, while this property in fiber is limited. Fibers will tend to break down under shock and destructive, sub-surface substances affect them.

Joining Ends—Joints in plastic core, produced by a kind of welding under heat, are homogeneous, with strength in the splice identical with that throughout the rest of the length. Mechanical joints in fiber core often have weak spots.



PLASTIC FOR THE INSIDE
. . . adds life to the outside

Other advantages include: Since plastic does not absorb water, steel in the rope is not subjected to moisture from this source. And while strength and toughness of fiber will vary, these properties are uniform in plastic cores.

Product—In manufacture, plastic is extruded through a cylindrical orifice of a specified diameter. It receives a secondary extrusion under pressure when the wire rope is being formed. In this operation, its diameter is reduced about 30 per cent. Plastic with a diameter of about 0.65 inch is reduced to ½ inch while becoming the core of a 1-inch wire rope.

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New Books

Nonferrous Edition Revised

MODERN USES OF NONFERROUS METALS by C. H. Mathewson, (second edition); cloth, 530 pages, 5¼ x 8¼ inches; published by American Institute of Mining and Metallurgical Engineers, New York, for $4.90 to AIME members, $7.00 to nonmembers; available from STEEL, Penton Bldg., Cleveland 13, O.

In this second edition, every chapter has been rewritten or added to and brought up to date. Leading authorities in their specific fields wrote the 26 chapters.

It contains a graphic picture of how nonferrous metals are used and a broad area of scientific information. Written in nontechnical language, the approach in many of the chapters is narrative. In some instances, where individual authors felt material required illustration, tables, graphs and other devices are employed.

General approach has been to include metals which have use as a basic material, while omitting those metals whose primary function is that of an additive.

Heat Treating Survey

ELEMENTS OF HEAT TREATMENT by the late George M. Enos and William E. Fontaine; cloth, 286 pages, 6 x 9¼ inches; published by John Wiley & Sons Inc., New York, for $5.00; available from STEEL, Penton Bldg., Cleveland 13, O.

This volume provides grounding in the basic principles governing the application of heat to alter the mechanical properties of metals.

The authors define the heat treatment processes of annealing, hardening, tempering, and normalizing and show how each process is used to get the metal characteristics needed for a specific job. Background information on the properties of metals and alloys is presented. Casting, forging, rolling, welding, machining and other processes related directly or indirectly to heat treatment are briefly discussed. Cartoon-type illustrations are used.

Welding Questions Answered

ELECTRIC ARC WELDING by John Benjamin Austin, B. S.; cloth, 280 pages, 5½ x 8½ inches; published by American Technical Society, Chicago, for $4.00; available from STEEL, Penton Bldg., Cleveland 13, O.

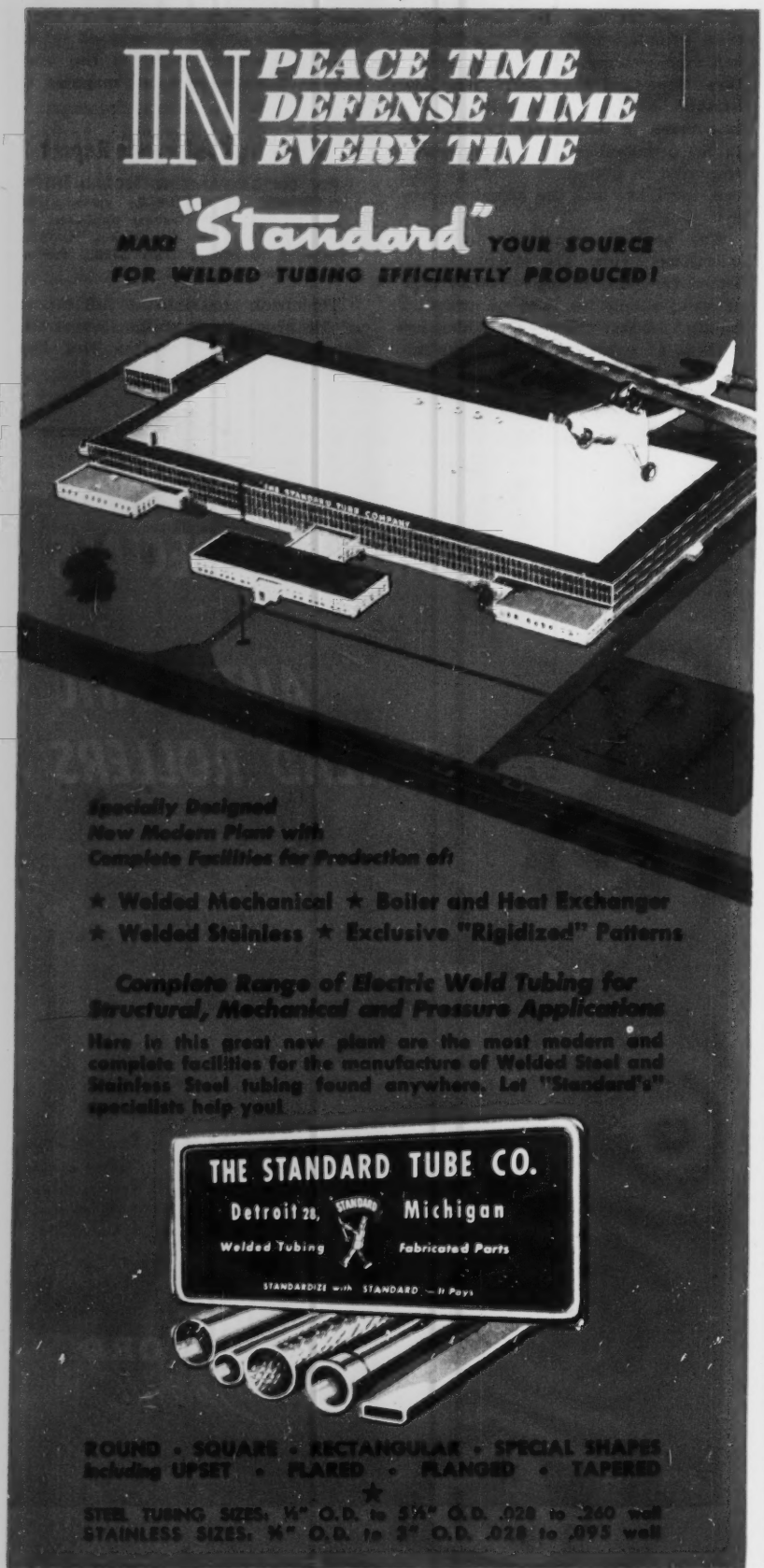
Starting with a thorough groundwork of fundamentals, the author of this work explains welding equipment and its use. He then applies these fundamentals to the major fields of welding—machinery, structural, pipe and hard surfacing. Automatic, as well as manual, welding is covered in detail, along with the three principal shielding processes employed in automatic welding—hidden, inert arc and the atomic-hydrogen process.

The book answers the following questions: How are electrodes selected for hard facing? What type of weld should be used on pressure piping? When should the hidden arc process be used? What are the advantages of maintaining a short arc? What electrode should be used in an overhead weld? What is the best way to tell if a welding machine is properly set?

Galvanizing Conference Report

HOT DIP GALVANIZING SECOND INTERNATIONAL CONFERENCE, cloth, 238 pages, 6¼ x 10 inches; published by Zinc Development Association, Oxford, England, available from STEEL, Penton Bldg., Cleveland 13, O.

This book contains the full report of the proceedings at the Second International Conference on Hot Dip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STAINLESS SIZES: ¾" O.D. to 3" O.D. .028 to .095 wall

Galvanizing held at Dusseldorf from June 30 to July 4, 1952, under the auspices of the Zinc Development Association.

The text of the papers presented and of the discussions which followed them has been revised and supplemented by an index of the technical subjects treated. The book is thus a record of the progress, problems and practice of hot dip galvanizing.

The conference was attended by approximately 180 galvanizers and experts from 12 different countries including the United States. It marked a notable advance in the work of international co-operation aimed at increasing technical efficiency of the industry.

Sea Trial Report

S. S. OCEAN VULCAN SEA TRIALS, Report No. 8, by F. B. Bull, M. A., B. Sc.; cloth, 176 pages, 8½ x 11 inches; published by Her Majesty's Stationery Office, London, for $8.00; available from STEEL, Penton Bldg., Cleveland 13, O.

The Admiralty Ship Welding Committee, in its study of the special problems arising from the use of welding in ships' structures, has carried out a program of investigations to compare the structural behavior of welded and riveted ships under the forces experienced at sea. This book is a report relating to the sea trials of the S.S. Ocean Vulcan. The Department of Aeronautical and Engineering Research, under the general direction of the committee, has been responsible for the preparation and execution of the experiments and the analysis of the results.

In addition to the analysis of the observed data, the report contains a review of previous similar work and an appendix giving theoretical considerations developed by Mr. Bull.

Industrial Standards Guide

PROFITING FROM INDUSTRIAL STANDARDIZATION by Benjamin Melnitsky; cloth, 381 pages, 6¼ x 9¼ inches; published by Conover-Mast Publications Inc., New York, for $5.50; available from STEEL, Penton Bldg., Cleveland 13, O.

This book was written to help management achieve three main objectives. These are: To give an overall view of standardization as it exists in industry today; to show how to profit from standardization; and to show the reader how to develop, distribute and use industrial standards in his own company.

A few of the chapter headings are: Purchasing Standards, Developing Company Standards, Selling Company Standards, Identification Standards.

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For those who wish to explore the problem more thoroughly, the services of General Chemical's Technical Service staff are available without cost or obligation. These experts are ready to assist plant operators in overcoming difficulties with the treatment of chromium wastes from plating, aluminum anodizing and brass-cleaning operations. Possibly they can help you with your disposal problems in the same practical way they have served so many other companies.

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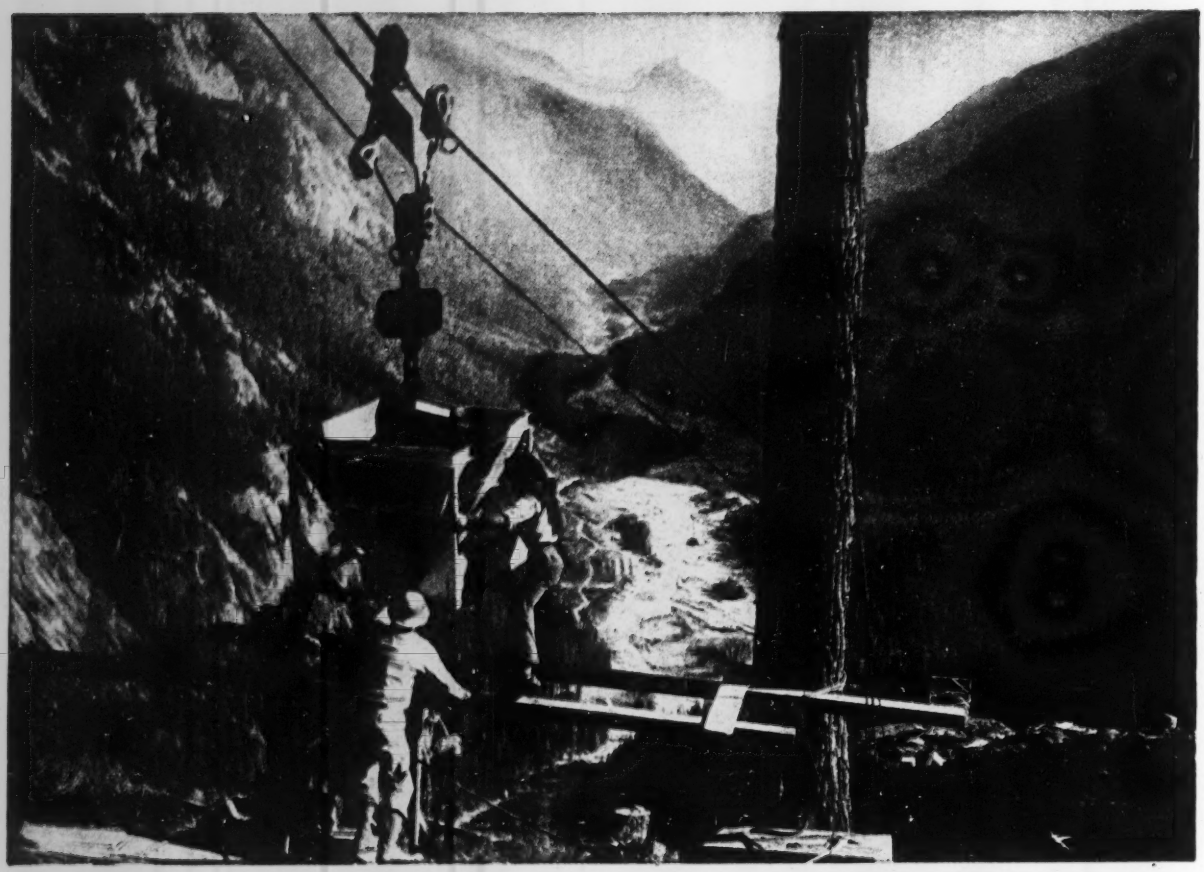
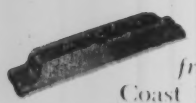


A CONCRETE ANSWER TO METAL PROBLEMS



Soon — more aluminium from Canada: A mile high in the Coast Mountains of British Columbia, these men have poured concrete footings for the towers of a transmission line such as you've never seen. This line is destined to carry aluminum production's basic requirement — electric power — to a great new aluminum smelting installation, the Kitimat plant of the Aluminum Company of Canada, Ltd. ("Alcan").

It is an extraordinary line. Its towers will face blizzards and gales such as no other transmission line has ever had to withstand. Its aluminum cables, reinforced with steel, are the largest ever spun. The more than a million horsepower that it is designed to carry will have to travel 48 tortuous miles, climb 5300 feet over a pass, and span gorges that exceed half a mile from tower to tower.

The last footings are in. Within months, power will move over the line to Kitimat, and with each 20,000 kilowatt-hours Alcan will produce another ton of aluminum ingot.

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STEEL
November 9, 1953

Market Outlook

THE SHAKEOUT in the steel market has about run its course, if the historically accurate bellwether—the scrap market—is correct again.

Usually, if scrap prices decline, the steel business is in for a slowdown, and if scrap prices strengthen markedly, you can look for steel demand to perk up.

REBOUND—The present letdown in demand for steel was foreshadowed by a drop that started in steelmaking scrap prices in August. After descending for six consecutive weeks, scrap prices turned upward and for five consecutive weeks have strengthened, with a result that STEEL's price composite on steelmaking grades is now $35 a gross ton, compared with a low mark of $31.50 five weeks ago.

GAGING THE FUTURE—The five-week upturn still leaves the composite considerably below the August high mark of $44.17, and that would suggest that demand for steel will not resume the hectic pace of early this year. But, no one expected a return of that.

If the rise in scrap prices doesn't point to a strengthening in demand for steel, it perhaps suggests that at least the decline in steel demand won't go much, if any, further.

OPTIMISTIC—Already, there is evidence that order cancellations and deferments have subsided. In some instances, some of those orders have been reinstated. E. G. Grace, chairman of Bethlehem Steel Co., the nation's second largest producer of steel, believes that the recent wave of cancellations has nearly run its full course.

In fact, Mr. Grace looks for a continued active market in steel. He bases much of his optimism on a business survey his company just completed. Among conclusions it came up with are: The automobile industry is planning for a good year in 1954. The outlook for construction is strong. Railroads are going to increase their purchases for ordinary operations.

The survey found nothing that points to trouble.

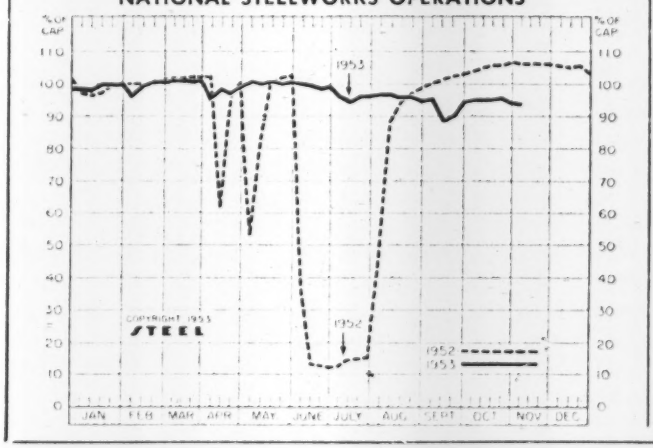
OUTLOOK—Looking further at the three factors mentioned by Mr. Grace, the auto industry thinks its 1954 output will be 5.5 million passenger cars and 1 million trucks. Passenger car output in 1953 is expected to be around 6 million units. STEEL estimates that construction in 1954 will total $32 billion, only about 8 per cent below the anticipated $35 billion for 1953. Railroads already are stepping up their purchases of rails over last year's level.

SLOWER—Meanwhile, the shakeout in the steel market pushed down the national steel production rate in the week ended Nov. 7 to 93.5 per cent of capacity from the preceding week's 94.

Some steel producers are operating at or above capacity, while others, particularly small marginal companies, are at low levels. For instance, one small midwest producer with one electric steelmaking furnace has shut down this furnace for November. Reason: Insufficient business.

MIXED DEMAND—Likewise, demand for the various forms of finished steel is mixed. Wire, tin plate, hot-rolled and cold-rolled carbon strip, pipe and most alloy steels are in plentiful supply. However, cold-rolled carbon steel sheets—the largest single product tonnagewise—are in strong demand.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

Percentage of capacity engaged at leading production points

	Week Ended Nov. 7	Change	Same Week 1952	Same Week 1951
Pittsburgh	92	-1*	105	101.5
Chicago	100	+1*	111.5	105.5
Mid-Atlantic	90	+1	99	101
Youngstown	97	-1	106	106
Wheeling	98	+2.5	96.5	100
Cleveland	101	2	110	101
Buffalo	106.5	0	106	104
Birmingham	96.5	9	105.5	17
New England	80	2	91	90
Cincinnati	87	-1	96	106
St. Louis	85.5	-6.5	98	90
Detroit	97.5	0	106	101.5
Western	104	+2	106.5	102
Estimated National Rate	93.5	0.5	106	101.5

*Change from preceding week's revised rate.

Weekly steelmaking capacity is estimated at 2,204,450 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

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PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Nov. 3

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, standard, No. 1	$4.409	Bars, H.R., alloy	$5.675	Strip, C.R., stainless, 430	
Rails, light, 40 lb	5.767	Bars, H.R., stainless, 302		clad	$0.415
Tie Plates	5.125	(lb)	0.418	Strip, H.R., carbon	5.015
Axles, railway	7.200	Bars, H.R., carbon	4.850	Pipe, black, buttweld (100 ft)	14.454
Wheels, freight car, 33 in.		Bars, reinforcing	4.775	Pipe, galv., buttweld (100 ft)	17.731
per wheels	47.000	Bars, C.F., carbon	7.850	Pipe, line (100 ft)	141.969
Plates, carbon	4.500	Bars, C.F., alloy	11.075	Casing, oil well, carbon (100 ft)	149.516
Structural Shapes	4.383	Bars, C.F., stainless, 302		Casing, oil well, alloy (100 ft)	214.113
Bars, tool steel, carbon (lb)	0.445	(lb)	0.432	Tubes, boiler (100 ft)	‡
Bars, tool steel, alloy, oil		Sheets, H.R., carbon	4.764	Tubing, mechanical, carbon (100 ft)	‡
hardening die (lb)	0.505	Sheets, C.R., carbon	5.901	Tubing, mechanical, stainless, 304 (100 ft)	161.182
Bars, tool steel, H.R. alloy,		Sheets, galvanized	6.944		
high speed W 6.75, Cr 4.5,		Sheets, C.R., stainless, 302			
V 2.1, Mo 5.5, C 0.60 (lb)	1.135	(lb)	0.548		
Bars, tool steel, H.R. alloy,		Sheets, electrical	9.183		
high speed W 18, Cr 4,		Strip, C.R., carbon	7.280		
V 1 (lb)	1.730				

Tin plate, hot-dipped, 1.25 lb	$8.433
Tin plate, electrolytic, 0.25 lb	7.133
Black plate, can making quality	6.233
Wire, drawn, carbon	7.713
Wire, drawn, stainless, 430 (lb)	0.545
Bale ties (bundle)	5.653
Nails, wire, 8d common	7.488
Wire, barbed (80-rod spool)	6.847
Woven wire fence (20-rod roll)	16.174

‡Not available.

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Nov. 3 1953	Oct. 27 1953	Month Ago	Oct. Average
(1947-1949 = 100)	141.5	141.5	141.6	141.5

STEEL's FINISHED STEEL PRICE INDEX

	Nov. 5 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av. = 100)	189.38	189.38	189.38	181.31	151.56
Index in cents per lb	5.130	5.130	5.130	4.912	4.114

STEEL'S ARITHMETICAL PRICE COMPOSITE*

	Nov. 5 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT	$115.18	$115.18	$115.54	$110.98	$96.05
No. 2 Fdry. Pig Iron, GT	56.54	56.54	56.54	55.04	46.69
Basic Pig Iron, GT	56.04	56.04	56.04	54.66	46.29
Malleable Pig Iron, GT	57.27	57.27	57.27	55.77	47.41
Steelmaking Scrap, GT	35.00	33.83	31.83	43.00	43.25

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Nov. 5 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	4.15	4.15	3.95	3.45
Bars, H.R., Chicago	4.15	4.15	4.15	3.95	3.35
Bars, H.R., del. Philadelphia	5.302	5.302	5.302	4.502	3.79
Bars, C.F., Pittsburgh	5.20	5.20	5.20	4.925	3.95
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85	3.275
Shapes, Std., Chicago	4.10	4.10	4.10	3.85	3.25
Shapes, del., Philadelphia	4.38	4.38	4.38	4.13	3.48
Plates, Pittsburgh	4.10	4.10	4.10	3.90	3.50
Plates, Chicago	4.10	4.10	4.10	3.90	3.40
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.35	3.75
Plates, Sparrows Point, Md.	4.10	4.10	4.10	3.90	3.45
Plates, Claymont, Del.	4.55	4.55	4.55	4.35	3.95
Sheets, H.R., Pittsburgh	3.925	3.925	3.925	3.775	3.275
Sheets, H.R., Chicago	3.925	3.925	3.925	3.775	3.25
Sheets, C.R., Pittsburgh	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Chicago	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Detroit	4.975	4.975	4.975	4.775	4.20
Sheets, Galv., Pittsburgh	5.275	5.275	5.275	5.075	4.10
Strip, H.R., Pitts.	3.975-4.125	3.975-4.125	3.975-4.125	3.75-4.225	3.50
Strip, H.R., Chicago	3.925	3.925	3.925	3.725	3.25
Strip, C.R., Pittsburgh	5.45-5.95	5.45-5.95	5.45-5.95	5.10-5.80	4.00
Strip, C.R., Chicago	5.70	5.70	5.70	5.35	4.00
Strip, C.R., Detroit	5.45-6.05	5.45-6.05	5.45-6.05	5.30-6.05	4.20
Wire, Basic, Pitts.	5.475-5.525	5.475-5.525	5.475-5.525	5.10-5.225	4.325
Nails, Wire, Pittsburgh	6.35-6.55	6.35-6.55	6.35-6.55	6.20-6.35	5.775
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$6.70

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$75.50	$75.50	$75.50	$70.50	$61.00
Wire rods, ½-⅝", Pitts.	4.525	4.525	4.525	4.325	3.775

PIG IRON, Gross Ton

	Nov. 5 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$55.50	$47.00
Basic, Valley	56.00	56.00	56.00	54.50	46.00
Basic, del. Phila.	60.75	60.75	60.75	59.25	50.17
No. 2 Fdry, Pitts.	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	55.00	46.25
No. 2 Fdry, Valley	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, del. Phila.	61.25	61.25	61.25	59.75	50.67
No. 2 Fdry, Birm.	52.88	52.88	52.88	51.38	43.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	58.93	49.09
Malleable, Valley	56.50	56.50	56.50	55.00	46.50
Malleable, Chicago	56.50	56.50	56.50	55.00	46.50
Ferromanganese, Duquesne	200.00‡	200.00‡	200.00‡	228.00*	163.00*

*78-82% Mn, per gross ton, Etna, Pa. ‡74-76% Mn, per net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$36.50	$36.50	$31.50	$44.00	$42.75
No. 1 Heavy Melt, E. Pa.	32.00	31.50	31.50	41.50	45.25
No. 1 Heavy Melt, Chicago	33.50	33.50	29.50	42.50	41.75
No. 1 Heavy Melt, Valley	35.50	35.50	33.50	44.00	42.75
No. 1 Heavy Melt, Cleve.	33.50	32.50	30.50	43.00	42.25
No. 1 Heavy Melt, Buffalo	34.50	34.50	33.50	43.00	48.50
Rails, Rerolling, Chicago	45.00	43.50	42.50	52.50	66.50
No. 1 Cast, Chicago	33.50	32.50	32.50	46.00	70.50

COKE, Net Ton

Beehive, Furn., Connlsvl.	$14.75	$14.75	$14.75	$14.75	$14.50
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	17.00	17.00
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	20.40

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99+%, ingots 21.40, pigs 20.00 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 11, 12% Si, 23.30; No. 43, 5% Si, 23.40; No. 142, 4% Cu, 24.40; No. 195, 4½% Cu, 0.8% Si, 23.70; No. 214, 3.8% Mg, 24.40; No. 356, 7% Si, 0.3% Mg, 23.20.

Antimony: R.M.M. brand, 99.5% 34.50; Lone Star brand, 34.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 25.50-26.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97% lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, $10.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $2.00 per lb deld.

Cobalt: 97-99%, $2.06 per lb for 500 lb keg; $2.02 per lb for 100 lb case; $2.07 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 29.50-30.00 deld. Conn. Valley, 29.625-30.125 deld. Midwest; Lake 30.125 deld; Fire refined 29.75 deld.

Germanium: 99.9%, $250 per lb nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $165-$175 per troy oz.

Lead: Common 12.20, chemical 13.40, corroding 13.40, St. Louis, New York basis, add 0.20.

Lithium: 98%, $11-$14 per lb, depending on quantity.

Magnesium: 99.8% standard ingots 27.00, 10,000 lb or more, f.o.b. Freeport, Tex. Sticks, 1/4 in. dia., 45.00, 100 to 4999 lb.

Magnesium Alloys: AZ91B 30.50; AZ91C and alloys C, H, G and R 32.50; alloy M 34.00, 10,000 lb or more.

DAILY NONFERROUS PRICE RECORD

	Price Nov. 5	Change	Previous Price	Oct. Avg.	Sept. Avg.	Nov. 1952 Avg.
Copper	29.50-30.00	Oct. 20	29.00-30.00	29.606	29.500	24.500
Lead	13.30	Sept. 16	13.80	13.300	13.340	13.900
Zinc	10.00	Sept. 11	10.50	10.000	10.180	12.500
Tin	82.00	Nov. 3	81.75	81.056	82.410	121.500
Nickel	60.00	Jan. 14	56.50	60.000	60.000	56.500
Aluminum	21.50	July 15	20.50	21.500	21.500	20.000
Magnesium	27.00	Mar. 9	24.50	27.000	27.000	24.500

Quotations in cents per pound based on: Copper, deld. Conn. Valley; Lead, common grade, deld. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, deld. New York; Nickel, electrolytic cathodes, 99.9%, base size at refinery unpacked; Aluminum, primary ingots, 99+%, deld.; Magnesium, 99.8%, Freeport, Tex.

Mercury: Open market, spot, New York, $1.2.$1.5 per 75-lb flask.

Molybdenum: Powder 99% hydrogen reduced $3.40 per lb; pressed ingot $4.06 per lb; sintered ingot $3.53 per lb.

Nickel: Electrolytic cathodes, sheets (1 x 4 in. and over), unpacked 60.00; 2-lb pigs 62.65; "XX" nickel shot 67.65; "F" nickel shot or ingots, for addition to cast iron, 60.00; prices f.o.b. Port Colborne, Ont., including import duty. New York basis, add 0.02.

Osmium: $110.$150 per troy oz. nom.

Palladium: $22.$24 per troy oz.

Platinum: $81.$93 per troy oz. from refineries.

Radium: $15.$21.50 per mg. radium content, depending on quantity.

Rhodium: $125 per troy oz.

Ruthenium: $75.$80 per troy oz.

Selenium: 99.5%, $1.25.$1.75 per lb.

Sodium: 16.50 carlots; 17.00 l.c.l.

Tantalum: Sheet, rod $42.45 per lb; powder $33.50 per lb.

Tellurium: $1.75 per lb.

Thallium: $12.50 per lb.

Tin: Straits, New York, 82.00.

Titanium: Sponge, 99.3+%, $5 per lb.

Tungsten: Powder, 98.8%, carbon reduced, 1000 lb lots $2.35 per lb f.o.b. shipping point; less than 1000 lb $3.50; 99+% hydrogen reduced $6.50. Treated ingots $10.45.

Zinc: Prime western 16.00, brass special 16.25, intermediate 16.50, E. St. Louis, freight allowed over 0.50 per pound. High grade 11.35, special high grade 11.00, die casting alloy ingot 11.50, deld.

Zirconium: Sponge $14.00 per lb; powder 100 lb or more $7.00; less than 100 lb $8.00.

(Note: Chromium, manganese and silicon metals are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

Aluminum Ingot: Piston Alloys 20.50-21.50; No. 12 foundry alloy (No. 2 grade) 20.00-20.50; 5% silicon alloy, 0.60 Cu max., 22.75-23.25; 13 alloy, 0.60 Cu max., 22.75-23.75; 195 alloy 21.75-22.50; 108 alloy 20.50-21.50; steel deoxidizing grades, notch bars, granulated or shot: Grade 1, 21.00-21.50; grade 2, 19.50-21.25; grade 3, 18.50-19.00; grade 4, 17.25-18.25.

Brass Ingot: Red brass, No. 115, 21.50; tin bronze No. 225, 33.25; No. 245, 29.50; high-leaded tin bronze, No. 305, 28.75; No. 1 yellow, No. 405, 20.75; manganese bronze No. 421, 25.25.

Magnesium Alloy Ingot: AZ63A, 31.50; AZ91B, 31.50; AZ91C, 32.00; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

COPPER WIRE

Bare, soft, f.o.b. eastern mills, 100,000 lb lots, 35.56; 30,000 lb lots, 35.78; l.c.l. 35.98. Weatherproof, 100,000 lb 36.28; 30,000 lb, 36.53; l.c.l., 37.03. Magnet wire deld., 15,000 lb or more 41.83; l.c.l., 42.58.

LEAD

(Prices to jobbers f.o.b. Buffalo, Cleveland, Pittsburgh.) Sheets, full rolls, 140 sq ft or more $18.50 per cwt.; pipe, full coils $18.50 per cwt.; traps and bends, list prices plus 30%.

TITANIUM

(Prices per lb, 100,000 lb and over, f.o.b. mill). Sheets, $15; sheared mill plate, $12; strip, $15; wire, $10; forging billets, $6; hot-rolled and forged bars, $6.

ZINC

Sheets 22.00, f.o.b. mill, 36,000 lb and over. Ribbon zinc in coils, 19.50-20.50, f.o.b. mill, 36,000 lb and over. Plates 19.50-22.50.

	NICKEL, "A" Nickel	MONEL, Monel	INCONEL, Inconel
Sheet, C.R.	86.5	67.0	92.5
Strip, C.R.	92.0	70.0	95.0
Plate, H.R.	84.0	66.0	90.5
Rod, Shapes	82.5	63.0	88.5
Seamless Tubes	114.0	100.0	117.5
Shot, Blocks		60.0	

ALUMINUM

(30,000 lb base, freight allowed over 400 lb)

Sheets and Circles: 2S and 3S mill finish c.f.

Thickness, Inches	Widths or Diameters, In.	Flat Sheet*	Coiled Sheet	Coiled Circles
0.250-0.126	12-48	32.9	...	...
0.125-0.091	12-48	34.1	...	...
0.090-0.051	12-48	35.1	32.7	37.0
0.050-0.032	12-48	35.7	32.9	37.4
0.031-0.018	12-48	36.1	33.2	38.1
0.017-0.008	12-48	36.6	33.6	38.4
0.007-0.0050	12-48	37.0	34.0	39.1
0.004-0.003	12-48	38.3	34.4	39.6
0.002-0.0017	12-36	39.1	35.7	41.3
0.0016-0.0014	12-36	40.0	36.5	42.6
0.0013	12-24	41.0	37.5	43.8
0.0012-0.0010	12-24	42.1	38.2	44.8
0.0011	12-24	43.1	39.4	46.4
0.0010-0.0005	12-24	44.3	40.5	48.0
0.0004-0.0003	12-24	45.6	41.9	50.0
0.0002-0.00015	12-24	47.1	43.1	51.8
0.0002	12-18	48.6	44.6	54.1
0.0001	12-18	50.2	46.0	56.1

*24-120 in. lengths, 3-26 in. max. dia.

ALUMINUM

Plates and Circles: Thickness 0.250-3.0 in., 24-60 in. widths or dia., 72-240 in. lengths.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	32.4	36.3
53S-F	33.5	37.4
14S-F	34.5	39.1
52S-F	36.2	40.9
61S-T6	37.4	41.5
24S-T4*	39.3	45.4
75S-T6	47.1	53.7

*24-48 in. widths or dia., 72-180 in. lengths

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Diameter or Distance Between Flats	Round 118-T3	178-T4	Hexagonal 118-T3	178-T4
Drawn				
0.125	50.6	57.9	...	...
0.126-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.281	47.9	46.2	...	...
0.312-0.281	47.9	46.2	...	59.4
0.312	47.9	46.2	...	56.8
Cold finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.562-0.688	46.6	44.9	53.4	50.2
0.750-1.000	44.9	43.8	48.9	47.3
1.062	44.9	44.8	...	44.7
1.125-1.500	43.8	42.1	47.2	45.7
Rolled				
1.562	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.625-3.000	39.9	38.2	...	...

ALUMINUM

Forging Stock: Round, Class 1, 12.0-32.76 in. specific lengths 36-144 in., diameters 0.375-5.0 in.; rectangles and squares, Class 1, 16.2 to 32.8 in. random lengths 0.375-1.0 in. thick, widths 0.750-10.0 in.

Pipe: A.S.A. Schedule 40, alloy 63S-T6, 20 ft lengths, plain ends, 30,000 lb base, per 100 ft.

Nom. pipe size, in.		Nom. pipe size, in.	
1/8	$15.05	2	$16.30
1/4	23.65	4	127.70
1	52.00	6	228.50
1 1/4	58.20	8	343.80

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 36.00, 0.064-in. $1.00, 0.125-in. 71.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled, AZ31, 53.00, 20,000 lb or more, 0.188-1.0 in. thick, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 61.00, 20,000 lb or more, ¼-in. thick, widths 24-48 in., lengths 60-144 in.

Extrusion Stock: AZ31, Rectangles, ½ x 2 in. 64.20, 1 x 1 in. 61.00. Rod, 1 in. 66.00, 2 in. 62.00. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ⅛-in. 72.00, 2 x 2 x ¼-in. 61.00. Channels, 3 in. 67.50. I-Beams, 3 in. 64.20.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Aluminum: 28 clipping 13.00; low copper clippings 11.00; mixed clippings 10.00; old sheet 10.00; borings and turnings 6.50-7.00; pistons and struts 7.00; crankcases 10.00; industrial castings 10.00.

Copper and Brass: Heavy copper and wire, No. 1 23.50; No. 2 copper 21.50; light copper 18.50-19.00; No. 1 composition red brass 16.75; No. 1 composition turnings 16.75-16.25; mixed brass turnings 14.00; new brass clippings 17.00; No. 1 brass rod turnings 12.50; light brass 10.00; heavy yellow brass 12.50; new brass rod ends 14.50-15.00; auto radiators, unsweated 12.50; cocks and faucets 14.50; brass pipe 16.00.

Lead: Heavy 9.50-10.00; battery plate 5.25-5.50; linotype and stereotype 11.75; electrotype 10.50; mixed babbitt 12.00.

Magnesium: Clippings 20.00-21.00; clean castings 19.00-20.00; iron castings, not over 10% removable Fe, 18.00-19.00.

Monel: Clippings 26.00-28.00; old sheet 24.00-26.00; turnings 19.00-21.00; rods 26.00-28.00.

Nickel: Sheets and clips 70.00; rolled anodes 70.00; turnings 10.00; rod ends 70.00.

Tin: No. 1 pewter 40.00-45.00; block tin pipe 65.00-67.00; No. 1 babbitt 37.00-38.00.

Zinc: Old zinc, 3.00; new die cast scrap, 3.50; old die cast scrap, 3.25.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Aluminum: 28, 38 clippings 14.50-15.00; 48, 52S clippings 14.50-15.00; 118, 178, 248, clippings 13.50-14.50; mixed clippings 13.00-14.00; old sheet 11.25-11.75; old cast 11.00-11.50; clean old cable, free of steel 14.75-15.25; borings and turnings 12.00-12.50.

Beryllium Copper: Heavy scrap 0.020 in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Copper, Brass: No. 1 copper 25.00; No. 2 copper 23.00; light copper 21.50; refinery brass 16.00; copper, per dry copper content 19.50; auto radiators 13.25 nom.

INGOT MAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 24.00; No. 2 copper 23.50; light copper 22.00; No. 1 composition borings 17.00-18.00; No. 1 composition solids 17.50-18.50; heavy yellow brass solids 13.50-14.00; yellow brass turnings 12.50-12.75; radiators 13.50-14.00.

PLATING MATERIALS

(F.o.b. shipping points, freight allowed on quantities.)

ANODES

Cadmium: Special or patented shapes $2.15 per lb.

Copper: Flat-rolled 45.01, oval 44.51, 2000-5000 lb; electrodeposited 34.78, cast 42.01, 5000-10,000 lb lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-1999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb 99.5; 200-499 lb 98; 500-999 lb 97.5; 1000 lb or more 97.

Zinc: Bar 18.50, bar or flat top 17.50, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb in 100 lb drums.

Chromic Acid: Less than 2000 lb 29.00; over 2000 lb 28.75.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulphate: 100-6000 lb 11.3; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.3.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-900 lb 40.00; 1000-2000 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulphate: 100 lb 37.00, 200 lb 35.00; 300 lb 34.00; 400-1000 lb 32.00; 5000-35,000 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.500; 2,500 oz and over 77.375.

Sodium Cyanide: 100 lb, under 1000 lb 19.80; 1000-19,900 lb 18.80; 20,000 lb and over 17.80; granular, add 1.0 premium to above.

Sodium Stannate: Less than 100 lb 65.2; 100-600 lb 61.4; 700-1900 lb 48.0; 2000-9000 lb 47.1; 10,000 lb or more 46.

Stannous Chloride (Anhydrous): Less than 50 lb $1.495; 50 lb $1.145; 100-200 lb $1.00; 400-900 lb 98.2; 1000-1900 lb 95.5; 2000-4900 lb 92.1; 5000-19,000 lb 86; 20,000 lb and over 79.9.

Stannous Sulphate: Less than 50 lb $1.20; 50 lb 90; 100-1900 lb 88; 2000 lb and over 86.

Zinc Cyanide: Under 1000 lb 61.30, 1000 lb and over 59.50.

BRASS MILL PRICES

	MILL PRODUCTS a Sheet, Strip, Plate	Rod	Wire	Seamless Tube	SCRAP ALLOWANCES f Clean Heavy	Rod Ends	Clean Turnings
Copper	48.38 b	45.96	...	48.44	26.000	26.000	25.250
Yellow Brass	41.72	41.66	42.26	44.63	19.750	19.500	18.000
Red Brass, 85%	46.44	45.28	46.08	48.27	23.000	22.750	22.250
Low Brass, 80%	44.47	44.44	44.61	47.28	22.125	21.875	21.375
Naval Brass	44.76	40.07	42.80	45.92	18.250	18.000	17.500
Commercial Bronze, 90%	46.04	46.80	47.09	49.51	23.875	23.625	23.125
Nickel Silver, 10%	55.66	58.13g	57.63	...	23.625	23.375	11.813
Phosphor Bronze, A	66.05	67.08	64.08	68.23	26.125	25.875	24.875
Silicon Bronze	52.71	51.90	52.71	70.11e	25.125	24.875	24.125
Manganese Bronze	49.18	42.62	51.06	....	18.250	18.000	17.500
Muntz Metal	45.96	39.77	....	....	18.625	18.375	17.875

a. Cents per lb, f.o.b. mill; freight allowed on 500 lb or more. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb. g. Leaded.

Nonferrous Metals

A lightweight metal faces a heavyweight problem. With military uses for magnesium falling off, the industry is trying to find ways to sustain consumption gains

BUILD-UP of civilian applications for magnesium and acquainting industry with proper methods of fabrication were problems keynoting the ninth annual meeting of the Magnesium Association in New York last week.

Military uses are falling off with the defense stretch-out, and aggressive promotion is needed to maintain the emergency-built consumption gains. One new use that was said to hold much hope is powdered magnesium as an engine fuel (see p. 73).

The public must become more magnesium conscious too, Frank Howard Sr., Howard Foundry Co., told members. A Chicago survey of the public showed 78 per cent of the people interviewed didn't know what magnesium is.

Moving In—Increased gains in magnesium die castings, chiefly at the expense of aluminum, were forecast by G. F. Hodgson, Doehler-Jarvis Division, National Lead Co. Two advantages helping mag here were increased prices of secondary aluminum and restrictions on aluminum's use following Korea.

From 1950 to 1952, estimated shipments of magnesium die castings zoomed from 1145 tons to 9000 tons. Sand, die and permanent mold castings are getting more competitive pricewise, too. Here finish is still a major problem. Development of chemical and plastic finishes hold promise for the future.

Near a Limit—While the industry is capable of producing more than it can sell, all of that production is not economical. Consumption today is coming near the efficient processing capacity of the industry, says Howard Perkins, president, Brooks & Perkins Inc. A large producer of hot-rolled plate, B & P notes greatest sales gains in process equipment and alkali industries.

More Plate Coming—More plate will be on the market soon. Dow Chemical Co.'s Madison, Ill., division now has the industry's first high-speed hot-rolling mill in operation. The 84-in. reversing breakdown coil mill can handle 1-ton rolling ingots and will produce hot-rolled plate in widths to 6 feet and lengths to 60 feet. An 84-in. cold coil mill for thin-gage sheet is also being installed and should be in operation early next year.

Re-elected as president of the association was James S. Kirkpatrick, Brooks & Perkins Inc. Newly elected were: L. G. White, Dominion Magnesium Ltd., as vice president, and J. D. Cosman, Superior Bearing Bronze Co., as treasurer. Announcement of appointment of a full-time secretary of the association for the first time is expected momentarily. Martha I. Hansen was reappointed assistant secretary.

STEEL'S Metal Price Averages for Oct., 1953
(Cents per pound)

Electrolytic Copper, del. Conn.	29.606
Lead, St. Louis	13.300
Prime Western Zinc, E. St. Louis	10.000
Straits Tin, New York	81.096
Primary Aluminum Ingots, del.	21.500
Magnesium	27.000
Nickel, f.o.b. refinery	60.000

Copper Deal Wrapped Up

Copper agreement with Chile has been wrapped up. Official approval and signing are expected quickly. Chief provisions include: Price of about 30 cents, copper will be put in stockpile and not on market, revision of Chile's taxation of U. S. producers from a basis of output to one of earnings, allowing copper companies to buy pesos at the recently revalued rate of 110 per dollar (as against 19.37 per dollar formerly), Chile to make future sales at market price only.

Question as to how much copper is stacked up in Chile today was answered last week by the Central Bank, official sales agency for the Chilean government. From February to October, 121,096 tons were accumulated; 10,500 tons sold at 35.50 cents.

Cobalt Price Rises

Expanding cobalt production facilities in the Belgian Congo has raised unit costs more than anticipated, so U. S. consumers will be paying an additional 20 cents per pound for the metal. African Metals Corp., distributors of Katanga cobalt metal in the U. S., last week announced the first price increase since October, 1951, from $2.40 to $2.60 per pound. Approximately 90 per cent of the cobalt consumed in the U. S. today comes from this source. Because cobalt is used chiefly as an alloying element and in small quantities, effect on industry will not be significant. Sales currently are good, with the stockpile probably absorbing any metal not consumed by industry.

Tariff Boosts Asked

In hearings before the Tariff Commission in Washington last week, the National Lead & Zinc Committee pleaded the case for increasing duties on imported lead and zinc by 50 per cent, maximum allowed by law. Also urged was passage of a sliding scale tariff law sidelined by Congress last year. Support of the need for Congressional action came from Albuquerque, N. Mex., where governors of 11 western states expressed concern over increased mine shutdowns and unemployment.

Because time heals many wounds, much of the urgency for action has been removed. Imports today are not the haunting specter of a month ago. Long-deferred buying in Europe has soaked up much of the excess metal, and were it not for large inventories in hands of U. S. producers, a price rise would be more than just a possibility.

Nonferrous Briefs

- Dealers in nonferrous scrap are just out of the market with sellers filled up mostly through December. 'Cause: Booming export demand. Even the exporters, offering such prices as 25.5 cents for No. 2 copper and 14.5 cents for radiators, can't get any.
- A new supplier of secondary magnesium in the Midwest is a distinct possibility. The area is the center of foundry activity. Remelt mag is used in sand, permanent mold and die castings, often sweetened with virgin metal. Foundry applications for magnesium are said to be growing more rapidly than for wrought products.
- An aluminum rolling mill for the Cleveland area is being promoted by Cleveland Electric Illuminating Co. It cites closeness of diversified markets and high, steady sales potentials for rolled aluminum in the Cleveland area.

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every grade of ZINC
for urgent military and
civilian requirements

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HIGH GRADE

SPECIAL HIGH GRADE

AMERICAN ZINC SALES COMPANY

Distributors for

AMERICAN ZINC, LEAD & SMELTING COMPANY

Columbus, O Chicago St. Louis New York

STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics
Code numbers following mill points indicate producing company; key on page 183. Key to footnotes, page 185.

—SEMIFINISHED—

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ... $86.00
Munhall,Pa. U5 ... 59.00

INGOTS, Alloy (NT)
Detroit R7 ... $63.00
Fontana,Calif. K1 ... 88.00
Midland,Pa. C18 ... 62.00
Munhall,Pa. U5 ... 62.00

BILLETS, BLOOMS & SLABS Carbon Rerolling (NT)
Aliquippa,Pa. J5 ... $62.00
Bessemer,Pa. U5 ... 62.00
Clairton,Pa. U5 ... 62.00
Ensley,Ala. T2 ... 62.00
Fairfield,Ala. T2 ... 62.00
Fontana,Calif. K1 ... 81.00
Gary,Ind. U5 ... 62.00
Johnstown,Pa. B2 ... 62.00
Lackawanna,N.Y. B2 ... 62.00
Munhall,Pa. U5 ... 62.00
So. Chicago,Ill. U5 ... 62.00
So.Duquesne,Pa. U5 ... 62.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 ... $75.50
Bessemer,Pa. U5 ... 75.50
Buffalo R2 ... 75.50
Canton,O. R2 ... 75.50
Clairton,Pa. U5 ... 75.50
Cleveland R2 ... 75.50
Conshohocken,Pa. A3 .. 82.50
Detroit R7 ... 78.50
Ensley,Ala. T2 ... 75.50
Fairfield, Ala. T2 ... 75.50
Fontana,Calif. K1 ... 94.50
Gary,Ind. U5 ... 75.50
Geneva,Utah C11 ... 75.50
Houston S5 ... 85.50
Johnstown,Pa. B2 ... 75.50
Lackawanna,N.Y. B2 .. 75.50
Los Angeles B3 ... 94.50
Munhall,Pa. U5 ... 75.50
Seattle B3 ... 94.50
So.Chicago R2,U5,W14 75.50
So.Duquesne,Pa. U5 .. 75.50
So.SanFrancisco B3 .. 94.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ... $82.00
Buffalo R2 ... 82.00
Canton,O. R2, T7 ... 82.00
Conshohocken,Pa. A3 .. 89.00
Detroit R7 ... 84.00
Fontana,Calif. K1 ... 101.00
Gary,Ind. U5 ... 82.00
Houston S5 ... 92.00
Ind.Harbor,Ind. Y1 ... 82.00
Johnstown,Pa. B2 ... 82.00
Lackawanna,N.Y. B2 ... 82.00
Los Angeles B3 ... 102.00
Massillon,O. R2 ... 82.00
Midland,Pa. C18 ... 82.00
Munhall,Pa. U5 ... 82.00
So.Chicago R2,U5,W14 82.00
So.Duquesne,Pa. U5 ... 82.00
Struthers,O. Y1 ... 82.00
Warren,O. C17 ... 82.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 ... $92.50
Canton,O. R2 ... 92.50
Cleveland R2 ... 92.50
Fontana,Calif. K1 ... 113.50
Gary,Ind. U5 ... 92.50
Massillon,O. R2 ... 92.50
So.Chicago,Ill. R2 ... 92.50
So.Duquesne,Pa. U5 .. 92.50

SHEET BAR (NT)
Fontana,Calif. K1 ... $93.18

SKELP
Aliquippa,Pa. J5 ... 3.85
Munhall,Pa. U5 ... 3.75
Warren,O. R2 ... 3.75
Youngstown R2, U5 ... 3.75

WIRE RODS
AlabamaCity,Ala. R2 .. 4.525
Aliquippa,Pa. J5 ... 4.525
Alton,Ill. L1 ... 4.70
Buffalo W12 ... 4.525
Cleveland A7 ... 4.525
Donora,Pa. A7 ... 4.525
Fairfield,Ala. T2 ... 4.525
Fontana,Calif. K1 ... 5.325
Houston S5 ... 4.925
Johnstown,Pa. B2 ... 4.525
Joliet,Ill. A7 ... 4.525
KansasCity,Mo. S5 ... 4.865
LosAngeles B3 ... 5.325
Minnequa,Colo. C10 ... 4.775
Monessen,Pa. P7 ... 4.725
No.Tonawanda,N.Y. B11 4.525
Pittsburg,Calif. C11 ... 5.175
Portsmouth P12 ... 4.525
Roebling,N.J. R5 ... 4.625
So.Chicago,Ill. R2 ... 4.525
SparrowsPoint,Md. B2 .. 4.625
Sterling,Ill.(1) N15 ... 4.525
Struthers,O. Y1 ... 4.525
Torrance,Calif. C11 ... 5.325
Worcester,Mass. A7 ... 4.825

—STRUCTURALS—

Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 .. 4.10
Aliquippa,Pa. J5 ... 4.10
Bessemer,Ala. T2 ... 4.10
Bethlehem,Pa. B2 ... 4.15
Clairton,Pa. U5 ... 4.10
Fairfield,Ala. T2 ... 4.10
Fontana,Calif. K1 ... 4.75
Gary,Ind. U5 ... 4.10
Geneva,Utah C11 ... 4.10
Houston S5 ... 4.60
Ind.Harbor,Ind. I-2 ... 4.10
Johnstown,Pa. B2 ... 4.15
KansasCity,Mo. S5 ... 4.80
Lackawanna,N.Y. B2 .. 4.15
LosAngeles B3 ... 4.80
Minnequa,Colo. C10 ... 4.55
Munhall,Pa. U5 ... 4.10
Niles,Calif(22) P1 ... 4.91
Phoenixville,Pa. P4 ... 4.95
Seattle B3 ... 4.85
So.Chicago,Ill. U5, W14 4.10
So.SanFrancisco B3 ... 4.75
Torrance,Calif. C11 ... 4.80
Weirton,W.Va. W6 ... 4.35

Wide Flange
Bethlehem,Pa. B2 ... 4.15
Clairton,Pa. U5 ... 4.10
Fontana,Calif. K1 ... 5.30
Lackawanna,N.Y. B2 .. 4.15
Munhall,Pa. U5 ... 4.10
So.Chicago,Ill. U5 ... 4.10

Alloy Stand. Shapes
Clairton,Pa. U5 ... 5.60
Fontana,Calif. K1 ... 6.40
Gary,Ind. U5 ... 5.00
Munhall,Pa. U5 ... 5.00
So.Chicago,Ill. U5 ... 5.00

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 ... 6.175
Bessemer,Ala. T2 ... 6.175
Bethlehem,Pa. B2 ... 6.20
Clairton,Pa. U5 ... 6.175
Fairfield,Ala. T2 ... 6.175
Fontana,Calif. K1 ... 6.825
Gary,Ind. U5 ... 6.175
Geneva,Utah C11 ... 6.175
Ind.Harbor,Ind. I-2 .. 6.175
Ind.Harbor,Ind. Y1 ... 6.675
Johnstown,Pa. B2 ... 6.20
Lackawanna,N.Y. B2 .. 6.20
LosAngeles B3 ... 6.85
Munhall,Pa. U5 ... 6.175
Seattle B3 ... 6.90
So.Chicago,Ill. U5, W14 6.175
So.SanFrancisco B3 ... 6.80
Struthers,O. Y1 ... 6.675

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 ... 6.20
Lackawanna,N.Y. B2 .. 6.20
Munhall,Pa. U5 ... 6.125
So.Chicago,Ill. U5 ... 6.125

BEARING PILES
Munhall,Pa. U5 ... 4.10
So.Chicago,Ill. U5 ... 4.10

—PILING—

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ... 4.925
Lackawanna,N.Y. B2 .. 4.925
Munhall,Pa. U5 ... 4.925
So.Chicago,Ill. U5 ... 4.925

—PLATES—

PLATES, Carbon Steel
AlabamaCity,Ala. R2 .. 4.10
Aliquippa,Pa. J5 ... 4.10
Ashland,Ky. (15) A10 .. 4.10
Bessemer,Ala. T2 ... 4.10
Clairton,Pa. U5 ... 4.10
Claymont,Del. C22 ... 4.55
Cleveland,O. R2 ... 4.10
Coatesville,Pa. L7 ... 4.35
Conshohocken,Pa. A3 .. 4.55
Ecorse,Mich. G5 ... 4.30
Fairfield,Ala. T2 ... 4.10
Fontana,Calif.(30) K1 .. 4.75
Gary,Ind. U5 ... 4.10
Geneva,Utah C11 ... 4.10
Granite City,Ill. G4 ... 4.30
Harrisburg,Pa. C5 ... 4.95
Houston S5 ... 4.60
Ind.Harbor,Ind. I-2, Y1 4.10
Johnstown,Pa. B2 ... 4.10
Lackawanna,N.Y. B2 .. 4.10
Minnequa,Colo. C10 ... 4.95
Munhall,Pa. U5 ... 4.10
Pittsburgh J5 ... 4.10
Riverdale,Ill. A1 ... 4.10
Seattle B3 ... 5.00
Sharon,Pa. S3 ... 4.10
So. Chicago,Ill. U5, W14 4.10
SparrowsPoint,Md. B2 .. 4.10
Steubenville, O. W10 ... 4.10
Warren,O. R2 ... 4.10
Weirton,W.Va. W6 ... 4.40
Youngstown R2, U5, Y1 4.10

PLATES, Carbon Abras. Resist.
Fontana,Calif. K1 ... 5.90
Geneva,Utah C11 ... 5.25

PLATES, Wrought Iron
Economy,Pa. B14 ... 9.30

PLATES, High-Strength Low-Alloy
Aliquippa,Pa. J5 ... 6.25
Bessemer,Ala. T2 ... 6.25
Clairton,Pa. U5 ... 6.25
Cleveland J5 ... 6.25
Conshohocken,Pa. A3 .. 6.25
Ecorse,Mich. G5 ... 6.45
Fairfield,Ala. T2 ... 6.25
Fontana,Calif.(30) K1 .. 6.95
Gary,Ind. U5 ... 6.25
Geneva,Utah C11 ... 6.25
Ind.Harbor,Ind. I-2 ... 6.25
Ind.Harbor,Ind. Y1 ... 6.75
Johnstown,Pa. B2 ... 6.25
Lackawanna,N.Y. B2 .. 6.25
Munhall,Pa. U5 ... 6.25
Pittsburgh J5 ... 6.25
Seattle B3 ... 7.15
Sharon,Pa. S3 ... 6.25
So.Chicago,Ill. U5, W14 6.25
SparrowsPoint,Md. B2 .. 6.25
Youngstown U5 ... 6.25
Youngstown Y1 ... 6.75

PLATES, Alloy
Claymont,Del. C22 ... 5.65
Coatesville,Pa. L7 ... 5.75
Fontana,Calif. K1 ... 6.60
Gary,Ind. U5 ... 5.55
Johnstown,Pa. B2 ... 5.55
Munhall,Pa. U5 ... 5.55
Sharon,Pa. S3 ... 5.55
So.Chicago,Ill. U5 W14 5.55
SparrowsPoint,Md. B2 .. 5.55

FLOOR PLATES
Cleveland J5 ... 5.15
Conshohocken,Pa. A3 .. 5.15
Ind.Harbor,Ind. I-2 ... 5.15
Munhall,Pa. U5 ... 5.15
So.Chicago,Ill. U5 ... 5.15

PLATES, Ingot Iron
Ashland,c.l. (15) A10 .. 4.35
Ashland,l.c.l (15) A10 .. 4.85
Cleveland, c.l. R2 ... 4.70
Warren,O. c.l. R2 ... 4.70

—BARS—

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 .. 4.15
Aliquippa,Pa. J5 ... 4.15
Alton,Ill. L1 ... 4.35
Atlanta,Ga. A11 ... 4.40
Bessemer,Ala. T2 ... 4.15
Buffalo R2 ... 4.15
Canton,O. R2 ... 4.15
Clairton,Pa. U5 ... 4.15
Cleveland R2 ... 4.15
Detroit R7 ... 4.30
Ecorse,Mich. G5 ... 4.35
Emeryville,Calif. J7 ... 4.90
Fairfield,Ala. T2 ... 4.15
Fairless,Pa. U5 ... 4.30
Fontana,Calif. K1 ... 4.85
Gary,Ind. U5 ... 4.15
Houston S5 ... 4.65
Ind.Harbor,Ind. I-2, Y1 4.15
Johnstown,Pa. B2 ... 4.15
KansasCity, Mo. S5 ... 4.85
Lackawanna,N.Y. B2 .. 4.15
LosAngeles B3 ... 4.85
Massillon,O. R2 ... 4.15
Milton,Pa. M18 ... 4.15
Minnequa,Colo. C10 ... 4.60
Niles,Calif. P1 ... 4.85
N.Tonawanda,N.Y. B11 4.15
Pittsburg,Calif. C11 ... 4.85
Pittsburgh J5 ... 4.15
Portland,Oreg. O4 ... 4.90
Seattle B3, N14 ... 4.90
So.Chicago R2, U5, W14 4.15
So.Duquesne,Pa. U5 ... 4.15
So.SanFran.,Calif. B3 .. 4.90
Sterling,Ill.(1) N15 ... 4.15
Struthers,O. Y1 ... 4.15
Torrance,Calif. C11 ... 4.85
Weirton,W.Va. W6 ... 4.30
Youngstown R2, U5 ... 4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ... 4.875
Buffalo R2 ... 4.875
Canton,O. R2, T7 ... 4.875
Clairton,Pa. U5 ... 4.875
Detroit R7 ... 4.975
Ecorse,Mich. G5 ... 5.075
Fontana,Calif. K1 ... 5.925
Gary,Ind. U5 ... 4.875
Houston S5 ... 5.375
Ind.Harbor,Ind. I-2, Y1 4.875
Johnstown,Pa. B2 ... 4.875
KansasCity, Mo. S5 ... 5.575
Lackawanna,N.Y. B2 .. 4.875
LosAngeles B3 ... 5.925
Massillon,O. R2 ... 4.875
Midland,Pa. C18 ... 4.875
So.Chicago R2, U5,W14 4.875
So.Duquesne,Pa. U5 .. 4.875
Struthers,O. Y1 ... 4.875
Warren,O. C17 ... 4.875
Youngstown U5 ... 4.875

BARS & SMALL SHAPES, H.R High-Strength Low-Alloy
Aliquippa,Pa. J5 ... 6.225
Bessemer,Ala. T2 ... 6.225
Bethlehem,Pa. B2 ... 6.225
Clairton, Pa. U5 ... 6.225
Ecorse,Mich. G5 ... 6.425
Fairfield,Ala. T2 ... 6.225
Fontana,Calif. K1 ... 7.475
Gary,Ind. U5 ... 6.225
Ind.Harb.,Ind. Y1 ... 6.725
Ind.Harb.,Ind. I-2 ... 6.225
Johnstown,Pa. B2 ... 6.225
Lackawanna,N.Y. B2 .. 6.225
LosAngeles B3 ... 6.925
Pittsburgh J5 ... 6.225
Seattle B3 ... 6.975
So.Chicago W14 ... 6.225
So.Duquesne,Pa. U5 .. 6.225
So.SanFrancisco B3 .. 6.975
Struthers,O. Y1 ... 6.725
Youngstown U5 ... 6.225

BAR SIZE ANGLES,H.R.CARBON
Bethlehem,Pa. B2 ... 4.35

BAR SIZE ANGLES, S. Shapes
Aliquippa,Pa. J5 ... 4.15
Atlanta A11 ... 4.40
Niles,Calif. P1 ... 4.85
SanFrancisco S7 ... 5.10

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 ... 5.00
Fontana,Calif. K1 ... 6.00
Gary,Ind. U5 ... 5.00
Houston S5 ... 5.70
KansasCity S5 ... 5.90
Youngstown U5 ... 5.00

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ... 5.20
BeaverFalls,Pa. M12, R2 5.20
Buffalo B5 ... 5.25
Camden,N.J. P13 ... 5.65
Carnegie,Pa. C12 ... 5.20
Chicago W18 ... 5.20
Cleveland A7, C20 ... 5.20
Detroit P17, R7 ... 5.35
Detroit B5 ... 5.40
Donora,Pa. A7 ... 5.20
Elyria,O. W8 ... 5.20
FranklinPark,Ill. N5 ... 5.20
Gary,Ind. R2 ... 5.20
GreenBay,Wis. P7 ... 5.20
Hammond,Ind. I-2, M13 5.20
Hartford,Conn. R2 ... 5.75
Harvey,Ill. B5 ... 5.20
LosAngeles R2 ... 6.65
Mansfield,Mass. B5 ... 5.75
Massillon,O. R2, R8 ... 5.20
Monaca,Pa. S17 ... 5.20
Newark,N.J. W18 ... 5.65
NewCastle,Pa. (17) B4 .. 5.20
Pittsburgh J5 ... 5.20
Plymouth,Mich. P5 ... 5.45
Putnam,Conn. W18 ... 5.75
Readville,Mass. C14 ... 5.75
St.Louis,Mo. M5 ... 5.50
So.Chicago,Ill. W14 ... 5.20
SpringCity,Pa. K3 ... 5.65
Struthers,O. Y1 ... 5.20
Waukegan,Ill. A7 ... 5.20
Worcester,Mass. W19 ... 6.10
Youngstown F3, Y1 ... 5.20

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md. (5) C19 4.45

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ... 6.325
BeaverFalls,Pa. M12 ... 6.325
Bethlehem,Pa. B2 ... 6.325
Buffalo B5 ... 6.325
Camden,N.J. P13 ... 6.50
Canton,O. R2, T7 ... 6.325
Carnegie,Pa. C12 ... 6.00
Chicago W18 ... 6.325
Cleveland A7, C20 ... 6.325
Detroit P7 ... 6.425
Detroit P17 ... 6.475
Detroit B5 ... 6.525
Donora,Pa. A7 ... 6.325
Elyria,O. W8 ... 6.325
Gary,Ind. R2 ... 6.325
Hammond,Ind. I-2, M13 6.325
Hartford,Conn. R2 ... 6.775
Harvey,Ill. B5 ... 6.325
Lackawanna,N.Y. B2 .. 6.325
Mansfield,Mass. B5 ... 6.775
Massillon,O. R2 R8 ... 6.325
Midland,Pa. C18 ... 6.325
Monaca,Pa. S17 ... 6.325
Newark,N.J. W18 ... 6.65
Plymouth,Mich. P5 ... 6.525
So.Chicago,Ill. R2, W14 6.325
SpringCity,Pa. K3 ... 6.475
Struthers,O. Y1 ... 6.325
Warren,O. C17 ... 6.325
Waukegan,Ill. A7 ... 6.325
Worcester,Mass. A7 .. 6.625
Youngstown F3, Y1 ... 6.325

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 .. 4.15
Atlanta A11 ... 4.40
Buffalo R2 ... 4.15
Cleveland R2 ... 4.15
Emeryville,Calif. J7 ... 4.90
Fairfield,Ala. T2 ... 4.15
Fairless,Pa. U5 ... 4.30
Fontana,Calif. K1 ... 4.85
Gary,Ind. U5 ... 4.15
Houston S5 ... 4.65
Ind.Harbor,Ind. I-2, Y1 4.15
Johnstown,Pa. B2 ... 4.15
KansasCity,Mo. S5 ... 4.85
Lackawanna,N.Y. B2 .. 4.15
LosAngeles B3 ... 4.85
Milton,Pa. M18 ... 4.15
Minnequa,Colo. C10 ... 4.75
Niles,Calif. P1 ... 4.85
Pittsburg,Calif. C11 ... 4.85
Pittsburgh J5 ... 4.15
SandSprings,Okla. S5 .. 5.00
Seattle B3, N14 ... 4.90
So.Chicago,Ill. R2 ... 4.15
So.Duquesne,Pa. U5 ... 4.15
So. SanFrancisco B3 ... 4.90
SparrowsPoint,Md. B2 .. 4.15
Sterling,Ill. (1) N15 ... 4.15
Struthers,O. Y1 ... 4.15
Torrance,Calif. C11 ... 4.85
Youngstown R2, U5 ... 4.15

BARS, Reinforcing (Fabricated; to consumers)
Johnstown, ¾-1" B2 ... 5.55
KansasCity S5 ... 6.35
LosAngeles B3 ... 6.18
Marion,O. P11 ... 5.55
Seattle N14 ... 5.80
Seattle B3 ... 6.25
So.SanFrancisco B3 ... 6.25
SparrowsPt, ½-1" B2 .. 5.55
Williamsport,Pa. S19 ... 5.45

RAIL STEEL BARS
Axis,Pa.(4) J8 ... 4.75
ChicagoHts.(3) C2 ... 4.50
ChicagoHts.(4) C2 ... 4.75
ChicagoHts.(3,4) I-2 ... 4.50
FortWorth,Tex.(26) T4 .. 4.65
Franklin,Pa.(3) F5 ... 4.50
Franklin,Pa.(4) F5 ... 4.75
Marion,O.(3) P11 ... 4.50
Moline,Ill.(3) R2 ... 4.50
Tonawanda(3,4) B12 ... 5.00
Williamsport,Pa.(3) S19 .5.25
Williamsport,Pa.(4) S19 .5.45

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 .10.40
Economy,Pa.(D.R.) B14 .12.90
Economy(Staybolt) B14 .13.20
McK.Rks.(Staybolt) L5 .15.50
Mc K.Rks.(S.R.) L5 ... 10.40
Mc K.Rks (D.R.) L5 ... 14.00

—SHEETS—

SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 .. 3.925
Allenport,Pa. P7 ... 3.925
Ashland,Ky.(8) A10 ... 3.925
Butler,Pa. A10 ... 3.925
Cleveland J5, R2 ... 3.925
Conshohocken,Pa. A3 .. 4.05
Detroit M1 ... 4.15
Ecorse,Mich. G5 ... 4.125
Fairfield,Ala. T2 ... 3.925
Fairless,Pa. U5 ... 4.025
Fontana,Calif. K1 ... 4.70
Gary,Ind. U5 ... 3.925
Geneva,Utah C11 ... 4.025
Granite City,Ill. G4 ... 4.125
Ind.Harbor,Ind. I-2, Y1 .3.925
Irvin,Pa. U5 ... 3.925
Kokomo,Ind. C16 ... 4.025
Lackawanna,N.Y. B2 .. 3.925

Munhall,Pa. U5 .....3.925
Newport,Ky. N9 .....3.925
Niles,O. N12 .....5.425
Pittsburg,Calif. C11 ..4.625
Pittsburgh J5 .....3.925
Riverdale,Ill. A1 .....3.925
Sharon,Pa. S3 .....3.925
So.Chicago,Ill. W14 ..3.925
SparrowsPoint,Md. B2..3.925
Steubenville,O. W10 ..3.925
Torrance,Calif. C11 ..4.625
Warren,O. R2 .....3.925
Weirton,W.Va. W6 ..3.925
Youngstown U5, Y1 ..3.925

SHEETS, H.R. (19 gage)

AlabamaCity,Ala. R2..5.225
Dover,O. R1 .....5.80
Mansfield,O. E6 .....5.80
Niles,O. N12 .....5.20
Torrance,Calif. C11 ..5.875

SHEETS, H.R. (14 ga. heavier) High-Strength Low-Alloy

Cleveland J5, R2 ....5.90
Conshohocken,Pa. A3 ..5.90
Ecorse,Mich. G5 .....6.10
Fairfield,Ala. T2 .....5.90
Fontana,Calif. K1 ....7.00
Gary,Ind. U5 .....5.90
Ind.Harbor,Ind. I-2 ....5.90
Ind.Harbor,Ind. Y1 ....6.40
Irvin,Pa. U5 .....5.90
Lackawanna(35) B2 ....5.90
Munhall,Pa. U5 .....5.90
Pittsburgh J5 .....5.90
Sharon,Pa. S3 .....5.90
So. Chicago,Ill. U5 ....5.90
SparrowsPoint(38) B2..5.90
Warren,O. R2 .....5.90
Weirton,W.Va. W6 ....6.175
Youngstown U5 .....5.90
Youngstown Y1 .....6.40

SHEETS, Hot-Rolled Ingot Iron (18 Gage and Heavier)

Ashland,Ky.(8) A10 ..4.175
Cleveland R2 .....4.525
Ind.Harbor,Ind. I-2 ..4.175
Warren,O. R2 .....4.525

SHEETS, Cold-Rolled Steel (Commercial Quality)

Allenport,Pa. P7 .....4.775
Butler,Pa. A10 .....4.775
Cleveland J5, R2 ....4.775
Ecorse,Mich. G5 .....4.975
Fairfield,Ala. T2 ....4.775
Fairless,Pa. U5 .....4.875
Follansbee,W.Va. F4 ..5.775
Fontana,Calif. K1 ....5.875
Gary,Ind. U5 .....4.775
GraniteCity,Ill. G4 ....4.975
Ind.Harbor,Ind. I-2,Y1 4.775
Irvin,Pa. U5 .....4.775
Lackawanna,N.Y. B2..4.775
Middletown,O. A10 ....4.775
Pittsburg,Calif. C11 ..5.725
Pittsburgh J5 .....4.775
SparrowsPoint,Md. B2 4.775
Steubenville,O. W10 ...4.775
Warren,O. R2 .....4.775
Weirton,W.Va. W6 ...4.775
Youngstown Y1 .....4.775

SHEETS, Cold-Rolled High-Strength Low-Alloy

Cleveland J5, R2 ....7.225
Ecorse,Mich. G5 .....7.425
Fontana,Calif. K1 ....8.275
Gary,Ind. U5 .....7.225
IndianaHarbor,Ind. Y1 7.725
Irvin,Pa. U5 .....7.225
Lackawanna(37) B2 ..7.225
Pittsburgh J5 .....7.225
SparrowsPoint (38) B2 7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ....7.475
Youngstown Y1 .....7.725

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10 .....5.275
Cleveland R2 .....5.375
Middletown,O. A10 ....5.275
Warren,O. R2 .....5.375

SHEETS, Gal'd No. 10 Steel

AlabamaCity,Ala. R2..5.275
Ashland,Ky.(8) A10 ..5.275
Canton,O. R2 .....5.275
Dover,O. R1 .....5.525
Fairfield,Ala. T2 ....5.275†
Gary,Ind. U5 .....5.275†
GraniteCity,Ill. G4 ....5.475
Ind.Harbor,Ind. I-2 ..5.325
Irvin,Pa. U5 .....5.275†
Kokomo,Ind.(13) C16..5.375
MartinsFerry,O. W10 ..5.275
Niles,O. N12 .....5.80
Pittsburg,Calif. C11 ..6.025†
SparrowsPoint,Md. B2 5.275
Steubenville,O. W10 ..5.275
Torrance,Calif. C11 ..6.275†
Weirton,W.Va. W6 ....5.275

†Based on 5c zinc.

SHEETS, Galvanized No. 10 High-Strength Low-Alloy

Irvin,Pa. U5 .....7.925
SparrowsPoint(39) B2 .8.075

SHEETS, Galvanized Ingot Iron No. 10 flat

Ashland,Ky.(8) A10 ..5.525
Canton,O. R2 .....6.025

SHEETS, Culvert

	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.325	....
Canton,O. R2	..6.475	6.925
Fairfield T2	....6.075	6.325
Gary,Ind. U5	....6.075	6.325
Ind.Harbor I-2	..6.075	6.325
Irvin,Pa. U5	.. 6.075	6.325
Kokomo,Ind. C16	6.525	....
MartinsFry.,O W10	6.075	....
Pitts.,Cal. C11	..6.825	....
SparrowsPt. B2	6.075	....
Torrance,Cal. C11	6.825	....

SHEETS, Culvert

	Pure Iron
Ashland,Ky. A10	....6.575
Fairfield,Ala. T2	....6.325
MartinsFerry,O. W10	..6.325

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.825
Irvin,Pa. U5 .....5.825†
Kokomo,Ind.(13) C16..5.925
Niles,O. N12 .....6.35

†Based on 5c zinc

SHEETS, ZINCGRIP Steel

Butler,Pa. A10 .....5.525
Middletown,O. A10 ....5.525

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 .....5.775
Middletown,O. A10 ....5.775

SHEETS, Electrogalvanized

Cleveland R2 (28) 6.125
Niles,O. R2 (28) 6.125
Weirton,W.Va. W6 ....5.975

SHEETS, ALUMINIZED

Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ..5.175
Cleveland R2 .....5.175
Gary,Ind. U5 .....5.175
GraniteCity,Ill. G4 ....5.875
Ind.Harbor,Ind. I-2 ..5.175
Irvin,Pa. U5 .....5.175
Middletown,O. A10 ....5.175
Youngstown Y1 .....5.175

BLUED STOCK, 29 ga.

Yorkville,O. W10 .....7.20
Follansbee,W.Va. F4 ..7.30
Follansbee (23) F4 ..7.175

SHEETS, Long Terne Steel (Commercial Quality)

BeechBott'm,W.Va.W10 5.675
Gary,Ind. U5 .....5.675
Mansfield,O. E6 .....6.25
Middletown,O. A10 ....5.675
Niles,O. N12 .....6.00
Weirton,W.Va. W6 ...5.675

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....6.075

SHEETS, Well Casing

Fontana,Calif. K1 ....6.20

—STRIP—

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 .3.925
Allenport,Pa. P7 .....3.925
Alton,Ill. L1 .....4.10
Ashland,Ky.(8) A10 ..3.925
Atlanta A11 .....4.175
Bessemer,Ala. T2 ....3.925
Bridgeport,Conn.(10)S15 4.15
Buffalo (27) R2 ....3.925
Butler,Pa. (8) A10 ..3.925
Carnegie,Pa. S18 ....4.425
Conshohocken,Pa. A3 ..4.05
Detroit M1 .....4.15
Ecorse,Mich. G5 .....4.125
Fairfield,Ala. T2 ....3.925
Fontana,Calif. K1 ....4.70
Gary,Ind. U5 .....3.925
Houston,Tex. S5 .....4.425
Ind.Harbor,Ind. I-2,Y1 3.925
Johnstown,Pa.(25) B2 3.925
KansasCity,Mo.(9) S5 4.625
Lackaw'na,N.Y.(32) B2..3.925
LosAngeles(25) B3 ....4.675
Milton,Pa. M18 .....3.925
Minnequa,Colo. C10 ...5.025
NewBritain(10) S15 ....4.15
N.Tonawanda,N.Y B11 3.925
Pittsburg,Calif. C11 ..4.675
Riverdale,Ill. A1 .....3.925
SanFrancisco S7 .....5.10
Seattle(25) B3 .....4.925
Seattle N14 .....4.925
Sharon,Pa. S3 .....3.925
So.Chicago,Ill. W14 ...3.925
So.SanFrancisco(25)B3 4.675
SparrowsPoint,Md. B2 3.925
Torrance,Calif. C11 ...4.675
Warren,O. R2 .....3.925
Weirton,W.Va. W6 ....4.025
Youngstown Y1, U5 ..3.925

STRIP, Hot Rolled Alloy

Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 ..... 6.40
Fontana,Calif. K1 ....7.80
Gary,Ind. U5 .....6.40
Houston,Tex. S5 .....6.90
KansasCity,Mo. S5 ....7.10
LosAngeles B3 .....7.60
NewBritn.,Conn.(10)S15 6.45
Sharon,Pa. S3 .....6.40
So.Chicago W14 .....6.40
Youngstown U5 .....6.40

STRIP, Hot-Rolled High-Strength Low-Alloy

Bessemer,Ala. T2 ....5.65
Conshohocken,Pa. A3 ..5.90
Ecorse,Mich. G5 .....6.15
Fairfield,Ala. T2 .....5.65
Fontana,Calif. K1 ....7.05
Gary,Ind. U5 .....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Lackawanna,N.Y. B2 ..6.00
LosAngeles(25) B3 ....6.40
Seattle(25) B3 .....6.65
Sharon,Pa. S3 .....5.95
So.SanFrancisco(25)B3 6.40
SparrowsPoint,Md. B2 .6.00
Warren,O. R2 .....5.95
Weirton,W.Va. W6 ....6.30
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ..4.175
Warren,O. R2 .....4.525

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 ....5.80
Bridgeprt,Conn.(10) S15..6.15
Butler,Pa. A10 .....5.45
Cleveland A7, J5 .....5.45
Dearborn,Mich. D3 ....5.75
Detroit D2, P20 .....5.70
Detroit M1 .....5.65
Dover,O. G6 .....5.80
Ecorse,Mich. G5 .....5.65
Follansbee,W.Va. F4 ..5.45
Fontana,Calif. K1 ....7.35
FranklinPark,Ill.(40) T6 5.70
Ind.Harbor,Ind. I-2 ....5.70
Lackawanna,N.Y. B2 ..5.45
LosAngeles C1 .....7.50
Mattapan,Mass. T6 ....6.30
Middletown,O. A10 ....5.45
NewBedford,Mass. R10..6.40
NewBritain(10) S15 ....6.15
NewCastle,Pa. B4 .....5.45
NewCastle,Pa. E5 .....5.95
NewHaven,Conn. A7 ..5.95
NewHaven,Conn. D2 ..6.20
Pawtucket,R.I. R3 ....6.80
Pawtucket,R.I.(21) N8..6.65
Riverdale,Ill. (40) A1 ..5.70
Rome,N.Y.(29) R6 .....5.45
Sharon,Pa. S3 .....5.45
SparrowsPoint,Md. B2 ..5.45
Trenton,N.J. R5 .....7.00
Wallingford,Conn. W2 ..6.20
Warren,O.(40) T5 .....5.95
Warren,O. R9 .....5.75
Warren,O. R2 .....5.45
Weirton,W.Va. W6 ....5.45
Worcester,Mass. W19 ..7.05
Youngstown C8 .....5.95
Youngstown Y1 .....5.45

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 .....12.00
Cleveland A7 .....12.00
Dover,O. G6 .....12.00
Fontana,Calif. K1 ....13.65
Harrison,N.J. C18 ....12.00
NewBritn,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8 12.15
Pawtucket,R.I.(12) N8 12.45
Sharon,Pa. S3 .....12.00
Worcester,Mass. A7 ..12.30
Youngstown C8 .....12.00

STRIP, Cold-Rolled High-Strength Low-Alloy

Cleveland J5 .....7.80
Cleveland A7 .....8.15
Dearborn,Mich. D3 ....7.90
Dover,O. G6 .....8.00
Ecorse,Mich. G5 .....8.35
Lackawanna,N.Y. B2 ..8.15
Sharon,Pa. S3 .....7.65
SparrowsPoint,Md. B2 ..8.15
Warren,O. R2 .....7.60
Weirton,W.Va. W6 ....8.30
Youngstown Y1 .....8.30

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....8.05

STRIP, Electrogalvanized

Dover,O. G6 .....5.70
Warren,O. T5 .....5.70
Weirton,W.Va. W6 ....5.45
Youngstown C8 .....5.95

TIGHT COOPERAGE HOOP

Atlanta A11 .....4.65
Riverdale,Ill. A1 .....4.50
Sharon,Pa. S3 .....4.35
Youngstown U5 .....4.35

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A5 Alloy Metal Wire Co.
A7 American Steel & Wire
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B8 Braeburn Alloy Steel
B9 Brainard Steel Div., Sharon Steel Corp.
B10 E. & G. Brooke, Wickwire Spencer Div., Colo. Fuel & Iron
B11 Buffalo Bolt Co. Div., Buffalo-Eclipse Corp.
B12 Buffalo Steel Div. H. K. Porter Co.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
C23 Charter Wire Products
C24 G. O. Carlson Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur B. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimmons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Inc.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lakes Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.
J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.
M18 Milton Electric Steel

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W. Co.
N16 New Delphos Mfg. Co.

O4 Oliver Iron & Steel Corp.
O6 Oregon Steel Mills

P1 Pacific States Steel Corp.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.
P20 Prod. Steel Strip Corp.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, John A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 Reliance Div., Eaton Mfg.
R9 Rome Mfg. Co.
R10 Rodney Metals Inc.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S25 Stainless Welded Products
S26 Specialty Wire Co. Inc.

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West Auto Mach. Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div., Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel
Y1 Youngstown Sheet & Tube

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Bereа,O. C7	...	8.00	8.60	10.55	12.85
Bridgeport,Conn.(10) S15	6.15	8.00	8.60	10.55	12.85
Bristol,Conn. W1	...	...	8.30	10.85	...
Carnegie,Pa. S15	...	7.65	8.60	10.55	12.85
Cleveland A7	5.45	7.65	8.60	10.55	12.85
Dearborn,Mich. D3	5.75	7.85	8.80	...	...
Detroit D2	6.45	7.85	8.45	10.55	...
Dover,O. G6	6.05	8.00	8.60	10.55	12.85
Franklin Park,Ill. T6	5.80	7.80	8.75	10.70	...
Harrison,N.J. C18	...	...	8.80	10.85	13.15
Mattapan,Mass. T6	6.30	7.95	8.80	10.85	13.15
New Britn.,Conn.(10) S15	6.15	8.00	8.60	10.55	12.85
New Castle,Pa. B4	5.45	7.65	8.60	...	...
New Castle,Pa. E5	5.95	8.00	8.60	10.55	12.85
New Haven,Conn. D2	6.70	7.90	8.55	10.50	...
New York W3	...	...	8.30	8.90	10.85	13.15
Pawtucket,R.I. N8:					
Cleve. or Pitts Base	...	8.00	8.60	10.55	12.85
Worcester,Mass. Base	6.65	7.95	8.90	10.85	13.15
Sharon,Pa. S3	5.45	7.65	8.60	10.55	12.85
Trenton,N.J. R5	...	8.30	8.90	10.85	13.15
Wallingford,Conn. W2	6.20	7.95	8.90	10.85	13.15
Warren,O. T5	6.20	8.00	8.60	10.55	12.85
Weirton,W.Va. W6	5.80	8.00	8.60	10.55	12.85
Worcester,Mass. A7	5.75	7.95	8.90	10.85	13.15
Worcester,Mass. T6	6.30	7.95	8.90	10.85	13.15
Youngstown C8	...	8.00	8.60	10.55	12.85
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.50	15.00	...
Franklin Park,Ill. T6	...	...	12.50	15.00	18.00
Harrison,N.J. C18	...	...	12.50	15.00	18.00
New York W3	...	...	12.50	15.00	18.00
Trenton,N.J. R5	...	...	12.50	15.00	18.00
Worcester,Mass. T6	...	...	12.50	15.00	18.00
Youngstown C8	...	...	12.50	15.00	18.00

SILICON STEEL

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (cut lengths ½c lower)	Field	Armature	Electric	Motor	Dynamo
BeechBottom,W10 (cut lengths)	...	...	8.35	9.60	10.40
Brackenridge,Pa. A4	...	...	8.85	10.10	10.90
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	8.05	8.35	8.85	(34)	...
Mansfield,O. E6 (cut lengths)	7.55	7.85	8.35	9.60	10.40
Newport,Ky. N9 (cut lengths)	...	7.85	8.35	9.60	10.40
Niles,O. N12 (cut lengths)	7.55	7.85	8.35	...	...
Vandergrift,Pa. U5	...	8.35	8.85	10.10	10.90
Warren,O. R2	8.05	8.35	8.85	10.10	10.90
Zanesville,O. A10	...	8.35	8.85	10.10	10.90

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)	Transformer Grade 72	65	58	52
BeechBottom,W10 (cut lengths)	10.95	11.50	12.20	13.00
Brackenridge,Pa. A4	11.45	...	...	...
Newport,Ky. N9 (cut lengths)	10.95	...	...	...
Vandergrift,Pa. U5	11.45	12.00	12.70	13.50
Warren,O. R2	11.45	...	...	...
Zanesville,O. A10	11.45	12.00	12.70	13.50

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	...	...	16.05	16.55
Vandergrift,Pa. U5	14.00	14.85	15.85	16.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	7.65	8.05
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American Coke (Base Box)	1.25 lb	1.50 lb
Aliquippa,Pa. J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind.Har. I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	...
Weirton,W.Va. W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)	
Aliquippa,Pa. J5	$6.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2,Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.55

MANUFACTURING TERNES (Special Coated)	
Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, 8 lb (Commercial Quality)	
Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

MANUFACTURING TERNES, LT. Coated, 6 lb	
Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 lb Coated)	
Gary,Ind. U5	9.75

—WIRE—

WIRE, Manufacturers Bright, Low Carbon	
AlabamaCity,Ala. R2	5.525
Aliquippa,Pa. J5	5.525
Alton,Ill. L1	5.70
Atlanta A11	5.775
Bartonville,Ill. K4	5.625
Buffalo W12	5.525
Chicago W13	5.525
Cleveland A7, C20	5.525
Crawfordsville,Ind. M8	5.625
Donora,Pa. A7	5.525
Duluth,Minn. A7	5.525
Fairfield,Ala. T2	5.525
Fostoria,O. (24) S1	5.75
Houston S5	5.925
Johnstown,Pa. B2	5.525
Joliet,Ill. A7	5.525
KansasCity,Mo. S5	6.125
Kokomo,Ind. C16	5.625
LosAngeles B3	6.475
Minnequa,Colo. C10	5.775
Monessen,Pa. P7	5.525
No.Tonawanda B11	5.525
Palmer,Mass. W12	5.825
Pittsburg,Calif. C11	6.475
Portsmouth,O. P12	5.525
Rankin,Pa. A7	5.525
So.Chicago,Ill. R2	5.525
So.SanFrancisco C10	6.475
SparrowsPoint,Md. B2	5.625
Sterling,Ill. (1) N15	5.525
Struthers,O. Y1	5.525
Torrance,Calif. C11	6.475
Waukegan,Ill. A7	5.525
Worcester,Mass. A7	5.825

WIRE, MB Spring, High Carbon	
Aliquippa,Pa. J5	6.925
Alton,Ill. L1	7.10
Bartonville,Ill. K4	7.025
Buffalo W12	6.925
Cleveland A7	6.925
Donora,Pa. A7	6.925
Duluth,Minn. A7	6.925
Fostoria,O. S1	6.925
Johnstown,Pa. B2	6.925
Millbury,Mass. (12) N6	8.725
Minnequa,Colo. C10	7.175
Monessen,Pa. P7	6.925
Monessen,Pa. P16	6.95
Muncie,Ind. I-7	7.125
Palmer,Mass. W12	7.225
Pittsburg,Calif. C11	7.875
Portsmouth,O. P12	6.925
Roebling,N.J. R5	7.225
So.Chicago,Ill. R2	6.925
So.SanFran. C10	7.875
SparrowsPt.,Md. B2	7.025
Struthers,O. Y1	6.925
Trenton,N.J. A7	7.225
Waukegan,Ill. A7	6.925
Worcester A7, J4	7.225
Worcester T6, W12	7.225

WIRE, Upholstery Spring	
Aliquippa,Pa. J5	6.625
Alton,Ill. L1	6.80
Buffalo W12	6.625
Cleveland A7	6.625
Donora,Pa. A7	6.625
Duluth,Minn. A7	6.625
Johnstown,Pa. B2	6.625
LosAngeles B3	7.575
Minnequa,Colo. C10	6.875
Monessen,Pa. P7, P16	6.625
NewHaven,Conn. A7	6.925
Palmer,Mass. W12	6.925
Pittsburg,Calif. C11	7.575
Portsmouth,O. P12	6.625
Roebling,N.J. R5	6.925
So.Chicago,Ill. R2	6.625
So.SanFrancisco C10	7.575
SparrowsPoint,Md. B2	6.725
Torrance,Calif. C11	7.575
Trenton,N.J. A7	6.925
Waukegan,Ill. A7	6.625
Worcester,Mass. A7	6.925

WIRE, Fine & Weaving (8" Coils)	
Alton,Ill. L1	10.75
Bartonville,Ill. K4	10.65
Buffalo W12	10.55
Chicago W13	10.55
Cleveland A7	10.55
Crawfordsville,Ind. M8	10.55
Fostoria,O. S1	10.55
Johnstown,Pa. B2	10.55
Kokomo,Ind. C16	10.55
Monessen,Pa. P16	10.55
Muncie,Ind. I-7	10.75
Palmer,Mass. W12	10.85
Roebling,N.J. R5	10.85
So.SanFrancisco C10	10.90
Waukegan,Ill. A7	10.55
Worcester,Mass. A7, T6	10.85

WIRE, Galv'd ACSR for Cores	
Bartonville,Ill. K4	9.50
Johnstown,Pa. B2	9.50
Monessen,Pa. P16	9.50
Muncie,Ind. I-7	9.70
Roebling,N.J. R5	9.80
SparrowsPt.,Md. B2	9.60

ROPE WIRE (A)	
Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo W12	9.35
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.35
Monessen,Pa. P7, P16	9.35
Muncie,Ind. I-7	9.55
Palmer,Mass. W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	9.65
SparrowsPt. B2	9.45
Struthers,O. Y1	9.35
Worcester J4, T6	9.65

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Tire Bead	
Alton,Ill. L1	12.75
Bartonville,Ill. K4	12.65
Monessen,Pa. P16	12.90
Roebling,N.J. R5	12.85

WIRE, Cold-Rolled Flat	
Anderson,Ind. G6	7.45
Buffalo W12	7.45
Cleveland A7	7.45
Crawfordsville,Ind. M8	7.55
Dover,O. G6	7.45
Fostoria,O. S1	7.45
Kokomo,Ind. C16	7.55
Franklin Park,Ill. T6	7.60
Massillon,O. R8	7.45
Monessen,Pa. P16	8.00
Monessen,Pa. P7	7.45
Pawtkt.R.I.(12) N8	7.75
Trenton,N.J. R5	7.75
Worcester A7, T6, W12	7.75

WIRE, Merchant Quality (6 to 8 gage)	An'ld. Galv.
Ala.City R2	6.675 7.075**
Aliquippa J5	6.675 7.20*
Atlanta A11	6.925 7.475
Bartonville(19) K4	6.675 7.225
Buffalo W12	6.675 7.075
Cleveland A7	6.675 ...
CrawfordsvilleM8	6.775 7.325
Donora,Pa. A7,	6.675 7.075†
Duluth,Minn. A7	6.675 7.075†
Fairfield,Ala. T2	6.675 7.075†
Houston,Tex. S5	7.675 7.475
Johnstown B2(24s)	6.675 7.225
Joliet,Ill. A7	6.675 7.075†
KansasCity,Mo. S5	7.275 7.675
Kokomo,Ind. C16	6.775 7.175
LosAngeles B3	7.625 ...
Minnequa,Colo. C10	6.925 7.325**
Monessen,P7(24s)	6.675 7.225
Palmer,Mass. W12	6.975 7.375
Pitts.,Calif. C11	7.625 8.025†
Portsmth.(18s) P12	6.675 ...
Rankin,Pa. A7	6.675 7.075†
So.Chicago,Ill. R2	6.675 7.075**
So.S.Fran.(18s) C10	7.625 8.025**
SparrowsPt. B2(24s)	6.775 7.325
Sterl'g(1)(24s) N15	6.675 7.225
Struthers,O. Y1	6.675 7.175
Worcester A7	6.975 ...

* Based on 10c zinc; † 5c zinc; ** Subject to zinc equalization extras.

WIRE (16 gage)	An'ld. Galv. Stone	Stone
Ala.City R2	12.50	14.05**
Aliquippa J5	10.63	12.72*
Bartonville(19) K4	10.73	12.51
Cleveland A7	12.50	...
Crawfordsville M8	12.50	14.35
Fostoria,O. S1	12.60	14.15
Johnstown B2	12.50	14.35
Kokomo,Ind. C16	12.60	14.15
Minnequa,Colo. C10	12.75	14.45**
Palmer,Mass. W12	12.50	14.05
Pitts.,Calif. C11	12.85	14.40†
So.Chicago R2	12.50	14.05**
SparrowsPt. B2	12.60	14.45
Sterling(1) N15	10.73	12.15
Waukegan A7	12.50	14.05†
Worcester A7	12.80	...

* Based on 11c zinc; † 5c zinc; ** Subject to zinc equalization extras.

WIRE, Barbed	Col.
AlabamaCity R2	153**
Aliquippa J5	150*
Atlanta A11	159
Bartonville,Ill. (19) K4	156
Crawfordsville,Ind. M8	159
Donora,Pa. A7	153†
Duluth,Minn. A7	153†
Fairfield,Ala. T2	153†
Houston,Tex. S5	161
Johnstown,Pa. B2	156
Joliet,Ill. A7	153
KansasCity,Mo. S5	165
Kokomo,Ind. C16	155
Minnequa,Colo. C10	159**
Monessen,Pa. P7	157
Pittsburg,Calif. C11	173†
Rankin,Pa. A7	153†
So.Chicago,Ill. R2	153**
S.SanFrancisco C10	173**
SparrowsPoint,Md. B2	158
Sterling,Ill.(1) N15	156

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga. Col.	
Ala.City,Ala. R2	140**
Ala.City 17 ga. R2	235**
Ala.City 18 ga. R2	245**
Aliqp'pa,Pa.9-14½ga. J5	143*
Atlanta A11	146
Bartonville,Ill.(19) K4	143
Crawfordsville,Ind. M8	145
Donora,Pa. A7	140†
Duluth,Minn. A7	140†
Fairfield,Ala. T2	140†
Houston,Tex. S5	148
Johnstown,Pa. B2	143
Johnstown 17 ga.,6" B2	234
Johnstown, 4" B2	237
Joliet,Ill. A7	140†
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142
Minnequa,Colo. C10	148**
Monessen,Pa. 9 ga. P7	145
Pittsburg,Calif. C11	163†
Rankin,Pa. A7	140†
So.Chicago,Ill. R2	140**
Sterling,Ill. (1) N15	143

† Based on 5c zinc; * 11c zinc; ** Subject to zinc equalization extras.

BALE TIES, Single Loop	Col.
AlabamaCity,Ala. R2	149
Atlanta A11	152
Bartonville,Ill.(19) K4	149
Crawfordsville,Ind. M8	151
Donora,Pa. A7	149
Duluth,Minn. A7	149
Fairfield,Ala. T2	149
Joliet,Ill. A7	149
KansasCity,Mo. S5	161
Kokomo,Ind. C16	151
Minnequa,Colo. C10	154
Pittsburg,Calif. C11	173
So.Chicago,Ill. R2	149
So.SanFran.,Calif. C10	173
SparrowsPoint,Md. B2	151
Sterling,Ill.(1) N15	149

NAILS, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	131
Aliquippa,Pa. J5	131
Atlanta A11	134
Bartonville,Ill. (19) K4	131
Chicago,Ill. W15	131
Cleveland A9	137
Crawfordsville,Ind. M8	133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Galveston,Tex. D7	139
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	136
Monessen,Pa. P7	131
Pittsburg,Calif. C11	150
Portsmouth,O. P12	132
Rankin,Pa. A7	131
So.Chicago,Ill. R2	131
SparrowsPt.,Md. B2	133
Sterling,Ill. (1) N15	131
Worcester,Mass. A7	137

NAILS, Cut (100 lb keg) to dealers (33)	
Conshohocken,Pa. A3	$8.00
Wheeling,W.Va. W10	8.00

STAPLES, Polished, Stock To dealers & mfrs. (7)	Col.
AlabamaCity,Ala. R2	133
Aliquippa,Pa. J5	133
Atlanta A11	136
Bartonville,Ill. (19) K4	133
Crawfordsville,Ind. M8	135
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Johnstown,Pa. B2	133
Joliet,Ill. A7	133
Kokomo,Ind. C16	135
Minnequa,Colo. C10	138
Monessen,Pa. P7	133
Pittsburg,Calif. C11	152
Portsmouth,O. P12	132
Rankin,Pa. A7	133
So.Chicago,Ill. R2	133
SparrowsPt.,Md. B2	135
Sterling,Ill. (1) N15	133
Worcester,Mass. A7	139

—FENCE POSTS—

	Col.
ChicagoHts.,Ill. C2, I-2	145
Duluth,Minn. A7 (49)	136
Franklin,Pa. F5	145
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	150
Moline,Ill. R2	145
So.Chicago,Ill. R2	145
Tonawanda,N.Y. B12	148
Williamsport,Pa. S19	158

SEAMLESS STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25
Ambridge, Pa. N2 (†)	15.75	...	19.75	...	22.25	...	23.75	...	23.75	...	23	...	25.5	...
Lorain, O. N3 (*)	15.75	4.5	19.75	5.5	22.25	8	23.75	9.5	23.75	9.5	23	8.75	25.5	11.25
Youngstown Y1 (††)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25

ELECTRIC WELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Youngstown R2 (**)	15.75	0.75	19.75	3	22.25	5.5	23.75	7	23.75	7	23	6.25	25.5	8.75

BUTTWELD STANDARD PIPE, Threaded and Coupled

Carload discounts from list, %

Sizes—Inches	⅛		¼		⅜		½		¾		1		1¼		1½	
List Per Ft	6c		8c		8.5c		11.5c		17c		23c		27.5c			
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	...	...	....	....	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Alton, Ill. L1 (§)	...	...	....	....	....	....	24.25	9	27.25	13	29.75	16.5	32.25	17.5	32.75	18.25
Benwood, W. Va. W10(††)	25.5	+0.75	17.75	+6	10.25	+10.75	28.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Butler, Pa. F6 (†)	26.5	+2.75	19.5	+7.25	12.5	+13	....	....	....	....	....	....	....	....	....	....
Etna, Pa. N2 (†)	...	...	....	....	....	....	26.25	7	29.25	11	31.75	14.5	34.25	16.25	34.75	17.25
Fontana, Calif. (§)	...	...	....	....	....	....	13.25	+3	16.25	1	18.75	4.5	21.25	5.5	21.75	6.5
Ind. Harbor Y1 (††)	...	...	....	....	....	....	25.25	9	28.25	13	30.75	16.5	33.25	17.5	33.75	18.5
Lorain, O. N3 (*)	...	...	....	....	....	....	26.25	16	29.25	20	31.75	23.5	34.25	23	34.75	24
Sharon, Pa. S4 (†)	26.5	−0.25	19.5	+4.25	12.5	+8.5	....	....	....	....	....	....	....	....	....	....
Sharon, Pa. M6	...	...	...	...	....	....	26.25	11	29.25	15	31.75	18.5	34.25	19.25	34.75	20.25
Sparrows Pt., Md. B2 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	24.25	8	27.25	12	29.75	15.5	32.25	16.5	32.75	17.5
Youngstown R2 (**)	...	...	....	....	....	....	26.25	11	29.25	15	31.75	18.5	34.25	19.25	34.75	20.25
Youngstown Y1 (††)	...	...	....	....	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Wheatland, Pa. W9 (‡)	24.5	+1.75	17.5	+6.25	10.5	+10.5	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5

Size—Inches	2		2½		3		3½		4	
List Per Ft	37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....
Alton, Ill. L1 (§)	33.25	18.75	34.75	18	34.75	18	....	....	....	....
Benwood, W. Va. W10(††)	35.25	20	36.75	20	36.75	20	27.75	10.5	27.75	10.5
Etna, Pa. N2 (†)	35.25	17.25	36.75	18.5	36.75	18.5	27.75	9	27.75	9
Fontana, Calif. K1 (§)	22.25	7	23.75	7	23.75	7	....	....	....	....
Ind. Harbor, Ind. Y1 (††)	34.25	19	35.75	19	35.75	19	....	....	....	....
Lorain, O. N3 (*)	35.25	24.5	36.75	23	36.75	23	....	....	....	....
Sharon, Pa. M6	35.25	20.75	36.75	20.5	36.75	20.5	....	....	....	....
Sparrows Pt., Md. B2 (§)	32.25	18	34.75	18	34.75	18	25.75	8.5	25.75	8.5
Youngstown R2 (**)	35.25	20.75	36.75	20.5	36.75	20.5	27.75	11	27.75	11
Youngstown Y1 (††)	35.25	20	36.75	20	36.75	20	....	....	....	....
Wheatland, Pa. W9 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*) 5c; (§), 10c to under 11c; (††), 10.50c-11.50c; with discounts adjusted on price of zinc at time of shipment.

BOILER TUBES

Net base c.l. prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
1	13	....	21.31	18.44
1¼	13	....	25.24	18.12
1½	13	23.12	27.89	20.01
1¾	13	26.84	32.27	23.66
2	13	30.08	36.28	26.51
2¼	13	34.18	41.23	29.86
2½	12	37.10	44.75	32.41
2¾	12	40.51	48.86	35.70
2⅞	12	43.85	52.90	38.66
3	12	45.92	55.39	41.23

RAILWAY MATERIALS

	Std. No. 1	Std. No. 2	Std. All No. 2	Tee Rails 60 lb Under
RAILS				
Bessemer,Pa. U5	4.325	4.225	4.275	5.20
Ensley,Ala. T2	4.325	4.225	....	5.20
Fairfield,Ala. T2	....	....	....	5.20
Gary,Ind. U5	4.325	4.225	4.275	....
Huntington,W.Va. W7	....	....	....	5.20
IndianaHarbor,Ind. I-2	4.325	4.225	4.275	....
Johnstown,Pa. B2	....	....	....	(16)5.20
Lackawanna,N.Y. B2	4.325	4.225	....	5.20
Minnequa,Colo. C10	4.325	4.125	....	5.70
Steelton,Pa. B2	4.325	4.225	....	....
Williamsport,Pa. S12	....	....	....	5.20

TIE PLATES

Fairfield,Ala. T2	5.125
Gary,Ind. U5	5.125
Ind.Harbor,Ind. I-2	5.125
Lackawanna,N.Y. B2	5.125
Minnequa,Colo. C10	5.125
Pittsburg,Calif. C11	5.275
Seattle B3	5.275
Steelton,Pa. B2	5.125
Torrance,Calif. C11	5.275

TRACK BOLTS (20) Treated

KansasCity,Mo. S5	11.00
Lebanon,Pa. B2	11.00
Minnequa,Colo. C10	11.00
Pittsburgh O3, P14	11.00

JOINT BARS

Bessemer,Pa. U5	5.275
Fairfield,Ala. T2	5.275
Ind.Harbor,Ind. I-2	5.275
Joliet,Ill. U5	5.275
Lackawanna,N.Y. B2	5.275
Minnequa,Colo. C10	5.275
Steelton,Pa. B2	5.275

AXLES

Ind.Harbor,Ind. S13	6.50
Johnstown,Pa. B2	6.50

STANDARD TRACK SPIKES

Ind.Harbor,Ind. I-2, Y1	7.05
KansasCity,Mo. S5	7.30
Lebanon,Pa. B2	7.05
Minnequa,Colo. C10	7.05
Pittsburgh J5	7.05
Seattle B3	7.55
So.Chicago,Ill. R2	7.05
Struthers,O. Y1	7.05
Youngstown R2	7.05

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh, f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in.,larger 8.90c
⅜-in. under ..... 26.5 off

WASHERS, WROUGHT

F.o.b. shipping point, to jobbers ..... List

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:	
½-in. & smaller diam.	4
⅝-in & ¾-in	5
⅞-in. and larger	3
Longer than 6 in.:	
All diams.	+4
Lag bolts, all diams.:	
6 in. and shorter	12
Over 6 in. long	8
Ribbed Necked Carriage	5
Blank	25
Plow	25
Step, Elevator, Tap and Sleigh Shoe	12
Tire Bolts	List
Boiler & Fitting-Up Bolts	23

NUTS

H.P. & C.P., regular & heavy:

Square, all sizes	58
H.P., Hex, regular & heavy:	
¾" and smaller	58
⅞" to 1⅛", inclusive	60
1¼" to 1½", inclusive	62
1⅝" and larger	58
C.P. Hex, regular heavy:	
All sizes	58
Hot Galv. Nuts (all types):	
¾" and smaller	40
⅞" to 1½", inclusive	43
Finished Hex Nuts:	
New standard, all sizes	58
Semifinished & Slotted Hex:	
Regular and heavy, all sizes	58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter	34
1 in. and smaller diam. x over 6 in.	20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller	34
¼-in. diam. & larger	14
N.F. thread, all diams.	8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish	47.5 & 10
Plated finishes	30 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged, per cent off list)

6 in. or shorter:	
⅝-in. & smaller	38
¾-in. through 1 in.	22
Longer than 6 in.:	
⅝-in. and smaller	20
¾-in. through 1 in.	7

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+% Fe, annealed	18.00
Unannealed	14.50
Swedish, c.l.f. N.Y., c.l., in bags	11.25
Electrolytic iron:	
Annealed, 99.5% Fe	42.50
Unannealed (99+% Fe)	36.50
Unannealed (99+% Fe, minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron:	
97.9-99.8% size 5 to 10 microns	83.00-148.00
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	34.00
Antimony, 500 lb lots	78.00
Brass, 20-ton lots	29.50-36.50
Bronze, 10-ton lots	51.00-60.00
Copper:	
Electrolytic	43.25
Reduced	43.25
Lead	21.75
Magnesium	75.00-85.00
Manganese:	
Minus 35 mesh	52.00
Minus 100 mesh	57.00
Minus 200 mesh	62.00
Nickel unannealed	89.50
Nickel Silver 5-ton lots	47.00
Silicon	38.50
Solder	8.50*
Stainless Steel, 302	91.00
Tin	14.00*
Zinc, 10-ton lots	17.50-25.00
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over	5.35
Less than 1000 lb	5.50
Chromium, electrolytic 99.9% Cr min.	3.50

*Plus cost of metal.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅜" to 1 7/16": 1 7/16" to 1 15/16" 4.35c; 1 15/16" to 2 5/16" 4.95c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.147 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ½" and thinner.
(16) 40 lb and under.
(17) Flats only; 0.25 in. & heavier.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 26" wide.
(24) Deduct 0.10c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.40c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; add 0.35c for universal mill.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 0.60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter, 60" & narrower.
(38) 14 gage & lighter, 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.015", 0.025" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(48) 6.7 gage.
(49) U post; add 2 cols. for T post.

STAINLESS STEEL MILL PRICES

(Representative prices, cents per pound, subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes, H.R. & C.F. Bars, Wire	Plates	Sheets	C.R. Strip, Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	46.25	35.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
304L			36.75			42.75	45.25	54.25	49.00
306	19.50	25.50		36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	50.50	53.75	63.50	72.00	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314							69.00	74.50	
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
316L			52.50			61.00	64.25	70.00	72.00
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
329			58.00			68.50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403			27.00	30.75		32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416			24.50	28.25		29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F		18.75	25.00	28.75		29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A,B,C		28.50	29.25	34.00		35.00	38.50	49.25	52.75
442			28.00			30.50	35.25	48.25	47.75
446			33.75	38.25	53.00	39.50	49.75	59.75	71.00
501			14.00	14.50	21.25	16.00	18.25	30.50	29.00
502			15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; Alloy Metal Wire Co. Inc.; American Steel & Wire Div., U. S. Steel Corp.; Armco Steel Corp.; Babcock & Wilcox Co.; Bethlehem Steel Co.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur B. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Corp.; Ellwood Ivins Steel Tube Works Inc.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Globe Steel Tubes Co.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Div., Borg Warner Corp.; Jessop Steel Co.; Johnson Steel & Wire Co. Inc.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; McInnes Steel Co.; National-Standard Co.; National Tube Div., U. S. Steel Corp.; Newman-Crosby Steel Co.; Pacific Tube Co.; Page Steel & Wire Div., American Chain & Cable Co. Inc.; Pittsburgh Rolling Mills Inc.; Republic Steel Corp.; Rodney Metals Inc.; Rome Mfg. Co.; Rotary Electric Steel Co., Sharon Steel Corp.; Shenango Agaloy Tube Co.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Spencer Wire Corp.; Stainless Welded Products Inc.; Standard Tube Co.; Superior Steel Corp.; Superior Tube Co.; Timken Roller Bearing Co.; Trent Tube Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates, Carbon Base 10%	Plates, Carbon Base 20%	Sheets, Carbon Base 20%	Sheets, Copper Base Both Sides
302	.....	31.00	31.00	77.00
304	27.60	32.50-32.70	32.50	77.00
310	36.50	41.00	.....	144.00
316	32.60	37.70-42.75	42.75	.....
318	37.00	42.20	.....	.....
321	29.30	34.40-37.00	37.00	111.00
347	39.40	35.50-40.50	40.50	130.00
405	23.40	30.60	.....	.....
410	22.30	30.10	.....	.....
430	22.90	30.10	.....	.....
Inconel	41.23	54.18	.....	165.00
Nickel	37.50	50.90	.....	.....
Monel	38.90	51.80	.....	.....
Copper*	.....	.....	46.00	.....

	Strip, Carbon Base, Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Copper*	27.85	35.85	24.00	32.25

*Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont Del. C22 Coatesville, Pa. I-7, New Castle, Ind. I-4 and Washington, Pa. J2; nickel, inconel, monel-clad plates Coatesville I-7; copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets in Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.25-.285	5% Cr Hot Work	0.39
Extra Carbon	0.33-.340	W-Cr Hot Work	0.41
Special Carbon	0.35-.360	V-Cr Hot Work	0.43
Oil Hardening	0.370-.39	Hi-Carbon-Cr.	0.665-.70

Grade by Analysis (%)

W	Cr	V	Co	Mo	$ per lb
20	4.25	1.6	12.25	.....	4.055
18	4.25	1	4.75	.....	2.340
18	4	2	9	.....	2.565-2.695
18	4	2	.....	.....	1.820
18	4	1	.....	.....	1.580-1.660
13.5	4	3	.....	.....	1.875
6.4	4.5	1.9	.....	5	1.065
6	4	3	.....	6	1.300
2	1.4	1.2	.....	.....	0.495
1.5	4	1	.....	8.5	0.895

Tool steel producers include: A4, A8, B2, B8, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

PIG IRON, Gross Ton

F.o.b. furnace prices in dollars per gross ton, as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax.

	Basic	No. 2 Foundry	Malleable	Bessemer
Birmingham District				
AlabamaCity, R2	52.38	52.88	.....	.....
Birmingham R2	52.38	52.88	.....	.....
Birmingham U6	.....	52.88	.....	.....
Woodward,Ala. W15	52.38	52.88	.....	.....
Cincinnati, deld.	.....	60.43	.....	.....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	.....
Tonawanda,N.Y. W12	56.00	56.50	57.00	.....
No. Tonawanda,N.Y. T9	.....	56.50	57.00	.....
Boston, deld.	66.65	67.15	67.65	.....
Rochester,N.Y., deld.	59.02	59.52	60.02	.....
Syracuse,N.Y., deld.	60.12	60.62	61.12	.....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary,Ind. U5	56.00	.....	56.50	.....
IndianaHarbor,Ind. I-2	56.00	.....	56.50	.....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	.....
So.Chicago,Ill. U5	56.00	.....	56.50	57.00
Milwaukee, deld.	58.17	58.67	58.67	59.17
Muskegon,Mich., deld.	.....	62.80	62.80	.....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	.....
Akron,O., deld from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	.....	.....	57.00
Mid-Atlantic District				
Bethlehem,Pa. B2	58.00	58.50	59.00	59.50
New York, deld.	.....	62.28	62.78	.....
Newark, deld.	61.02	61.52	62.02	62.52
Philadelphia, deld.	60.75	61.25	61.75	62.25
Birdsboro,Pa. B10	58.00	58.50	.....	.....
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	58.00	58.50	59.00	59.50
Troy,N.Y. R2	58.00	58.50	59.00	.....
Pittsburgh District				
Nevillelsland,Pa. P6	56.00	56.50	56.50	.....
Pittsburgh (N&S sides), Ambridge, Aliquippa, deld.	57.37	57.87	57.87	.....
McKeesRocks, deld.	57.04	57.54	57.54	.....
Lawrenceville,Homestead, Wilmerding,Monaca, deld.	57.66	58.16	58.16	.....
Verona,Trafford, deld.	58.19	58.69	58.69	.....
Brackenridge, deld.	58.45	58.95	58.95	.....
Bessemer,Pa. U5	56.00	.....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	.....	.....	.....
McKeesport,Pa. N3	56.00	.....	.....	57.00
Midland,Pa. C18	56.00	.....	.....	.....
Monessen,Pa. P7	56.00	.....	.....	.....

	Basic	No. 2 Foundry	Malleable	Bessemer
Youngstown District				
Hubbard,O. Y1	.....	.....	56.50	.....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Youngstown Y1	.....	.....	56.50	57.00
Youngstown U5	56.00	.....	.....	57.00
Mansfield,O., deld.	60.90	.....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	59.50	63.00	63.50	.....
Fontana,Calif. K1	62.00	62.50	.....	.....
Geneva,Utah C11	56.00	56.50	.....	.....
GraniteCity, Ill. G4	57.90	58.40	58.90	.....
Ironton,Utah C11	56.00	56.50	.....	.....
LoneStar,Texas L6	52.00	52.50*	52.50	.....
Minnequa,Colo. C10	58.00	59.00	59.00	.....
Rockwood,Tenn. T3	.....	.....	56.50	.....
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, deld.	61.76	62.26	.....	.....

*Low phos. southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.00-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$67.00
Buffalo H1	68.25

ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$91.00
Keokuk,Iowa, Openhearth & Fdry. freight allowed K2	95.50
Keokuk, OH & Fdry. 12½ lb piglets, 16% Si, frt. allowed K2	98.50
Wenatchee,Wash. OH & Fdry, freight allowed K2	95.50

LOW PHOSPHORUS PIG IRON, Gross Ton

Clevelalnd, intermediate, A7	$61.00
Rockwood,Tenn. T3	70.00
Steelton,Pa. B2	64.00
Philadelphia, deld.	67.55
Troy,N.Y. R2	64.00

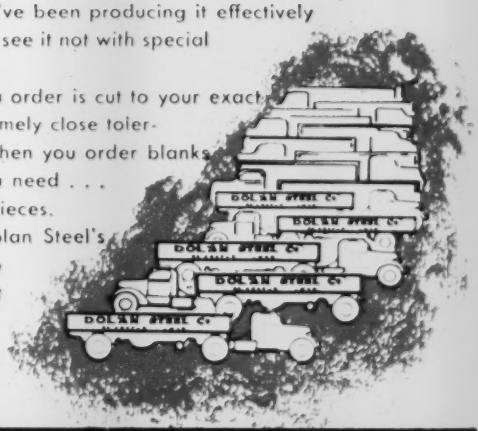
DOLAN STEEL gives you..... 3d imension accuracy

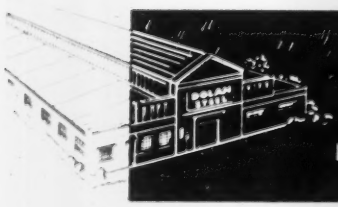
width • length • gauge

There's nothing new about 3-D at Dolan Steel—we've been producing it effectively for years. But here it means only one thing, and you see it not with special glasses, but with an accurate rule and micrometer.

Every coil of strip steel . . . every blank or strip you order is cut to your exact specifications — accurate in every dimension. Extremely close tolerances *actually* give you more parts per ton. And when you order blanks or strips, Dolan shears them to exactly the size you need . . . no scrap loss from cutting up large standard size pieces.

If you need strip steel, now, in coils or blanks, Dolan Steel's fleet of 15 fast, modern trailer trucks are ready to serve you. Call us today and let us prove to you that our policy of providing fast service is not just words . . . but action!





DOLAN Steel Company Inc.

810 UNION AVE BRIDGEPORT 7, CONN

PHONE 5-8173

NEW ENGLAND'S LARGEST STEEL WAREHOUSE, FLAT ROLLED STEEL, EXCLUSIVELY, SERVING NEW ENGLAND, NEW YORK AND NEW JERSEY

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, St. Paul, 15 cents; Seattle and Spokane, Wash., no charge.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††§		Carbon	Floor
Baltimore	6.20	7.64	7.78	7.00	....	6.86	8.17§	12.04	6.98	6.85	7.98
Birmingham	6.10	7.09	8.00[2]	6.30	....	6.15	8.90	....	6.35	6.35	8.65
Boston	6.89	7.83	9.18	7.13	....	6.87	8.35	12.28	7.06	7.13	8.26
Buffalo	6.18	7.15	8.96	6.79	....	6.35	7.70	12.17	6.59	6.68	7.88
Charlotte, N. C.	6.95	7.80	8.89	6.90	....	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.18	7.12	8.00	6.42	....	6.28	7.30	11.75	6.46	6.33	7.46
Cincinnati	6.51	7.19	8.42	6.72	....	6.58	7.66	12.17	6.93	6.80	7.88
Cleveland	6.18	7.12	7.90	6.58	....	6.34	7.65	11.89	6.79	6.50	7.79
Detroit	6.38	7.31	8.29	6.71	7.36	6.56	7.60	11.92	6.93	6.80	7.80
Erie, Pa.	6.19	7.13	9.01	6.54	....	6.28	7.70	....	6.56	6.50	7.79
Houston	7.15	7.60	9.32	7.45	....	7.45	....	....	7.35	7.20	8.55
Jersey City, N. J.	6.54	7.45	8.42	6.82	....	6.75	8.43§	11.84	6.50	6.67	8.01
Los Angeles	7.25	9.00	9.35	7.55	11.20	7.15	9.10	13.05	7.35	7.20	9.25
Milwaukee	6.35	7.29	8.17	6.59	....	6.45	7.57	11.92	6.63	6.50	7.63
Moline, Ill.	6.53	7.47	8.35	6.77	....	6.63	7.65	....	6.81	6.68	....
New York	6.54	7.45	8.42	6.82	....	6.75	8.43§	11.84	6.50	6.67	8.01
Newark, N. J.	6.78	7.75	8.42	7.16	....	7.06	8.43§	....	6.90	6.99	8.30
Norfolk, Va.	6.90	....	....	7.20	....	7.20	8.50	....	7.20	7.15	7.85
Philadelphia	6.53	7.55	8.41	7.02	8.80	6.87	8.19§	11.89	6.67	6.63	7.65
Pittsburgh	6.18	7.12	8.30	6.55	....	6.28	7.65	11.89	6.46	6.33	7.46
Portland, Oreg.	7.90	9.30	10.00	7.90	....	7.60	10.65	....	7.50	7.55	9.40
Richmond, Va.	6.50	7.45	8.00	7.10	....	7.05	7.95	....	7.10	6.85	8.10
St. Louis	6.48	7.42	8.30	6.72	....	6.58	7.70	12.05	6.86	6.73	7.86
St. Paul	6.84	7.78	8.66	7.08	....	6.94	8.06	....	7.12	6.99	8.12
San Francisco	7.35	8.70	10.15	7.60	....	7.15	9.75	13.05	7.25	7.20	9.25
Seattle	8.15	9.50	9.80	8.00	....	7.60	10.65	13.50	7.50	7.60	9.40
Spokane	8.15	9.40[3]	9.80	7.60	....	7.60	10.55§	14.15	7.25	7.35	9.80
Washington	6.71	8.15	8.35	7.51	....	7.37	8.43	....	7.49	7.36	8.49

*Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gages extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed. Base quantities, 2000 to 9999 lb except as noted: Cold-rolled strip, and cold-finished bars, 2000 lb and over, except in Seattle where base is 2000 to 9999 lb; [1]—500 to 9999 lb; [2]—1000 to 1999 lb; [3]—1000 lb and over; [7]—1500 lb to 3999; [8]—under ½ in.

Distributors Meet Stiff Competition

Undertone of market remains soft on products which are in ample supply. Bookings improve slightly over October rate and are expected to be well sustained through November

Cleveland Competition among the warehouses is noticeably stiffer. Some price shading and freight absorption is reported, especially by sellers that have not been in business long. With supplies more freely available, there is a tendency to switch to suppliers in position to give best possible service. Warehouse stocks now are pretty much in balance in most items, exceptions being wide flange beams and heavy plates.

Boston On products where inventories are ample or a trifle high, competition among warehouses is increasing with some price softening. Involved are wire products, buttweld and light wall electric tubing, a few specialties and, in spots, alloy and bar tonnage. Sales are mounting slowly.

Higher nickel stainless orders are moderately heavier, but volume is under expectations. Distributors are better fixed on plates. Cold-finished bar inventories retard new buying for forward delivery.

Philadelphia Warehouse business in October was down from that in September, but over the past week demand has been more active and distributors look for fairly sustained activity in November. Inventories are still off balance as to size ranges. However, distributors are studying requirements with a view to establishing whether it is necessary to carry such a variety of sizes and types.

Chicago Warehouses are experiencing no discomfort as result of the freeing of nickel-bearing stainless steels from control Nov. 1. Many users are switching from nickel-free grade to nickel-stainless but demand is orderly. There still is good call for the 430 type. With exception of wide flange beams, distributors are improving stocks of carbon products.

Seattle October warehouse volume was below expectations. Seasonal conditions, general slowing of business, and tendency of consumers to live off inventories are factors for sluggishness.

Stocks are not yet normal. Some houses report hot and cold-rolled sheets tight, while certain structural sizes are not easy to obtain.

Competition is stiffer, accounting

STEEL IMPORT PRICES

(Base, per 100 lb, landed, duty paid)

	North Atlantic	South Atlantic	Gulf Coast	West Coast
Deformed Bars, Intermediate, ASTM-A-305	$4.86	$4.94	$4.86	$5.14
Bar Size Angles	4.53	4.61	4.53	4.81
Structural Angles	4.53	4.61	4.53	4.81
I-Beams	4.80	4.88	4.80	5.08
Wide Flange Beams	4.94	5.02	4.94	5.22
Sheet and Plate, 10 gage, 11 gage, 5' x 10'	5.87	5.95	5.87	6.25
Furring Channels, C.R., 1000 ft, ⅞ x 0.30 lb per ft	21.30	21.54	21.30	22.14
Barbed Wire	6.10	6.12	6.10	6.33
Merchant Bars	4.81	4.89	4.81	5.09
Hot Rolled Bands	4.97	5.05	4.97	5.25
Wire Rods, Thomas Commercial No. 5	4.68	4.75	4.72	5.00
Wire Rods, O-H, Cold Heading Quality No. 5	5.14	5.21	5.19	5.46
Channels	4.80	4.88	4.80	5.08
Bright Common Wire Nails, 8d	6.40	6.50	6.45	6.70

Size O.D.	Wgt/Foot/Lb	Gulf Port	West Coast	Vancouver
Seamless A.P.I. Casing, Grade J-55:				
5½ in.	15.5	$1.47/ft	$1.51/ft	$1.32/ft
7 in.	23	2.10/ft	2.17/ft	1.90/ft
Seamless N-80 Casing:				
5½ in.	17	1.94/ft	2.00/ft	1.75/ft
7 in.	23	2.50/ft	2.70/ft	2.36/ft
Seamless J-55 Tubing:				
2⅜ in.	4.7	0.60/ft	0.63/ft	0.55/ft
2⅜ in.	6.5	0.80/ft	0.83/ft	0.73/ft

Sources of shipment: Western continental European (Schuman Plan) countries.

for some price adjustments last week. Business on the whole, however, is considered favorable and most sellers expect 1953 results to better those of 1952.

San Francisco — Although district warehouses are doing large volume business, it is taking much more selling to move tonnage. Competition is keen and there is come evidence of price cutting. Stocks are in better balance.

Los Angeles—The upturn in warehouse activity continues. Distributors view last quarter prospects with confidence.

Steel Bars . . .

Bar Prices, Page 182

Philadelphia—In no product of late has supply eased more sharply than in large rounds. Long after demand began to level off in the smaller sizes of hot-rolled bars, stringency continued in the larger sizes. Then came the shell cancellations and soon numerous gaps were beginning to appear, abetted by a letup in civilian requirements. Today the larger sizes, 2½-inches and larger, are in easier supply than the smaller sizes.

As Nov. 15 approaches, marking the beginning of the 45-day lead time for January, orders are being stepped up for that position.

New York—Orders for hot-rolled carbon bars are picking up as the 45-day lead time for January nears. Producers will have little carryover going into next year. If any supply strigency exists at present it is in smaller rather than larger sizes. Demand for cold-finished bars is spotty.

Pittsburgh—Consumers are returning to the bar market, although demand is still slower than it was last summer. Ammunition cutbacks are felt by some barmakers. Producers are actively seeking orders.

Cleveland—With demand pressure noticeably down, barmakers are seeking business more aggressively than for a long time past. Recent cutbacks in the shell program have been followed by noticeable easing in large bar supply. Contributing further to the easier situation is the fact automotive requirements are down.

First quarter business has not yet developed in volume, reflecting, in part at least, the inventory consciousness of consumers at present.

Chicago — Bar production is substantially below capacity under impact of slack activity in farm equipment output.

Los Angeles — Demand for bars sags. Producers are reducing work schedules.

Sheet Buying Pace Noticeably Slower

Inventory-conscious consumers ordering more cautiously for first quarter. Spurt in demand anticipated soon as some users cut stocks to low levels

Sheet and Strip Prices, Page 182 & 183

Cleveland — First quarter orders are not coming in to the mills as rapidly as had been anticipated. Inventory-conscious consumers appear in no rush though some mills have booked substantial tonnage for the period. Producers, generally, anticipate an active first quarter. They expect heavy buying will develop for the period before the current month ends. Some consumers are said to have reduced inventories to dangerously low levels, in fact, they would be caught short should demand suddenly spurt.

At a recent meeting of the National Association of Sheet Metal Distributors, a resolution was introduced urging the marking of galvanized flat sheets with the minimum coating and recommending the mills give consideration to eliminating the wide and divergent quality standards which now exist.

It was maintained by the distributors that lack of quality marking is a serious deterrent to the successful marketing of the product. It was held minimum standard quality marking would be helpful to architects, builders and others, particularly with respect to so-called commercial quality sheets.

Boston—Narrow cold strip converters are getting hot-strip inventories into flexible shape for first quarter. Volume booked beyond December is small. Freight absorption is given more consideration. On carlots, Boston area, delivered, the difference on sheets between Morrisville, Pa., and Sparrows Point, Md. is slight with the former f.o.b. price $2 higher. Buffalo is also competitive with absorption less than $2 per ton, carlots. For both cold-rolled strip and sheets, stainless 300 series, orders are slightly heavier.

Wallingford, Conn., cold strip producer has reduced price of cold-finished 0.26-0.40 carbon to 6.20c mill; also on 0.25 and under all gages. Price has been 6.40c to 6.65c, depending on gage.

Pittsburgh—Scattered cancellations and reduction of forward ordering by appliance and automakers can't dispel long term optimism of sheet producers. One area producer enjoyed its best September and best third

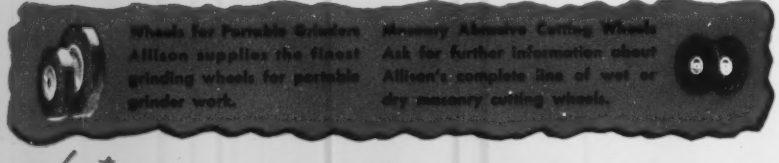
Use of Structural Pipe Speeds Plant Expansion

L. B. Foster Co. used standard steel pipe instead of structural shapes for all columns, trusses, joists and bracing in erecting an addition to its Chicago plant. No special fittings or attachments were necessary in the erection of the pipe frame. The building was designed to allow use of field erection bolts so that it may, if desired, be dis-assembled and moved to another location

cut your costs . . . where you cut your materials

Those who make decisions in industry really want to get a clear and unobstructed view of their cutting problems. When they do, they find great advantages in the abrasive method. Actual performance records prove that abrasive cutting with Allison job-tested wheels increases production and lowers costs.

Why not prove it to your own satisfaction? Simply get the facts and you will see why more production men turn to Allison Abrasive Cutting.


Wheels for Portable Grinders
Allison supplies the finest grinding wheels for portable grinder work.
Masonry Abrasive Cutting Wheels
Ask for further information about Allison's complete line of wet or dry masonry cutting wheels.

The *best* way to cut many materials . . . the *only* way to cut some.

Allison ABRASIVE CUTTING WHEELS

THE ALLISON CO., 255 ISLAND BROOK AVENUE, BRIDGEPORT, CONN.

4AL53

quarter in history this year. Prospects are for continued strong sales at slightly lower levels.

New York—Of the major grades of sheets, cold-rolled is in strongest demand. Some producers expect a cold-rolled sheet carryover of a couple weeks at yearend, whereas they will be current on other grades. Electrical sheets are easier.

Philadelphia—While there has been some freight absorption in sheets, it appears business will have to decline much more sharply before equalization becomes noticeable. In no case has there been cutting of prices quoted by the leading mills.

With the Fairless works in the picture on hot and cold-rolled sheets, midwestern producers are convinced it would not pay them to absorb the freight required to compete in this district.

These mills will continue to compete here on specialties where freight equalization will not likely be much of a factor.

Detroit—Demand for carbon sheets is good here. Coupled with reduction of inventory by some consumers is a trend to place more local purchases with Detroit area mills, involving cancellations of orders in such districts as Pittsburgh.

Chicago—Demand for cold-rolled sheets is strong. Most makers expect to have some carryover into first quarter. Automotive and household appliance requirements are substantial. Hot-rolled sheets are considerably easier. Galvanized sheet makers report call for their full output.

San Francisco—Galvanized second sheets are being sold at substantially reduced prices, cutting somewhat into the normal movement of prime sheets.

Semifinished Steel . . .

Semifinished Prices, Page 182

Chicago—Ingot production was scheduled at 100 per cent of capacity last week for the first time since the final week of September.

Four district mills boosted their rates last week and two held unchanged. Inland Steel has virtually completed shakedown of its new 46-inch blooming mill and expects to maintain a slightly higher steelmaking rate in coming weeks.

Los Angeles—Far western steel operations of late have been at a resounding 104 per cent of annual rated capacity. Bethlehem Pacific Coast Steel Corp.'s Los Angeles plant was scheduled to operate at 43 per cent of theoretical capacity this week, however.

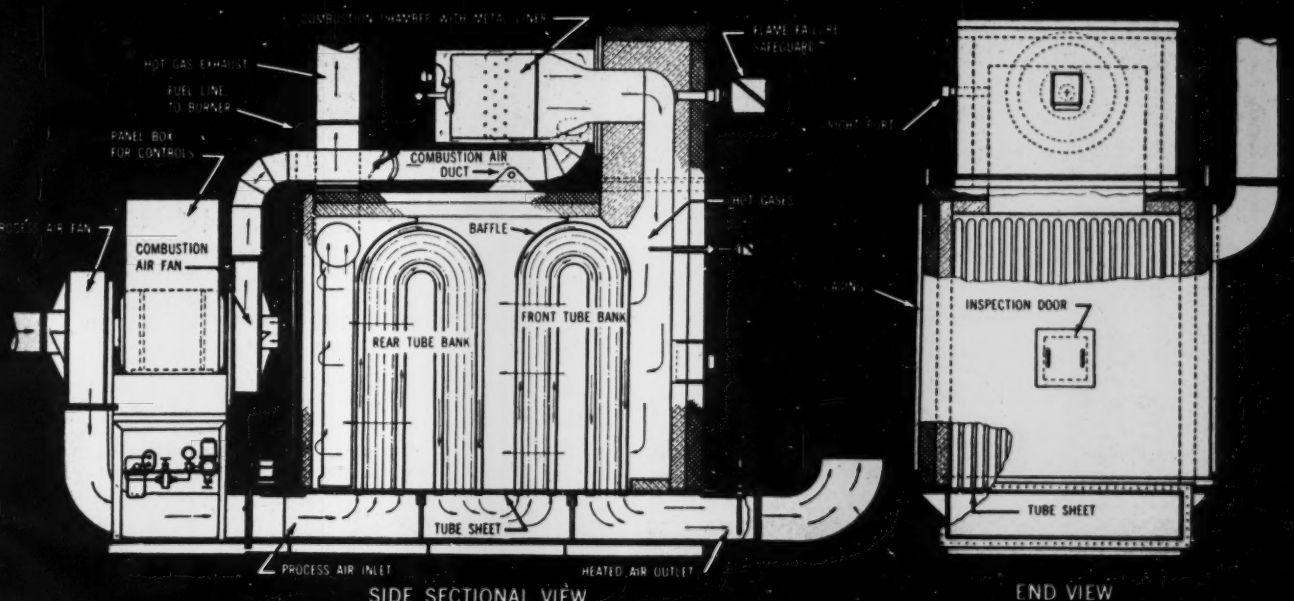
Seattle—Indications point to returning normal steel operations in

WHITING

FOUNDRY EQUIPMENT

USE HOT BLAST

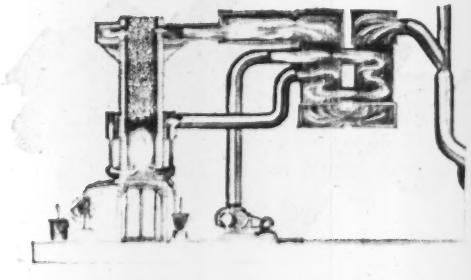
for hotter iron with less coke!



SIDE SECTIONAL VIEW

END VIEW

Todd-Thermo Process . . . Oil or gas is used to preheat the blast. Particularly useful for short heats, since preheated air is available right from the beginning of the heat.



Griffin Hot Blast System . . . Incompletely burned gas from the stack of the cupola is used to preheat the air.

Pre-heat the cupola air supply and get hotter iron and reduced coke consumption! With a Whiting Hot Blast System you obtain a higher melt temperature which produces hot, fluid metal . . . a higher percentage of good castings with close, even grain . . . closer metallurgical control of the melt and an hourly melting rate increase of as much as 15%. Since proportionately less coke is used the sulphur pickup decreases and the faster melting rate means less oxidation. This permits you to use more *scrap* iron—less *pig* iron!

You have a choice of two Whiting Systems to pre-heat the air. The Todd-Thermo externally fired heater is a compact, high efficiency unit employing a single burner. The Griffin system, a recuperative method, uses partially burned gases from the stack. Each method has certain advantages for particular situations, and a Whiting foundry engineer will help you choose the system that is best for your requirements.

Write today!
Ask for Bulletin FO-3. It gives complete information on the advantages of hot blast.

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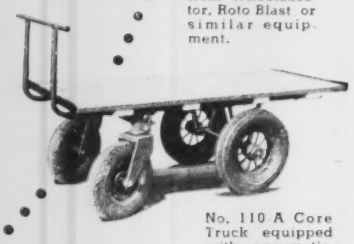
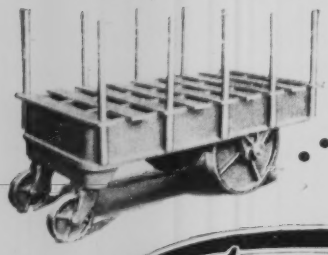
Sterling Heavy Duty Trucks are tailor-made for transporting castings, cores and heavy foundry equipment. Ruggedly constructed for heavy duty service and thoroughly job-tested under actual foundry conditions, Sterling Trucks have proven their ability to handle loads as heavy as 3 tons. Both wheels and casters are equipped with anti-friction bearings. Short turning radius. Easy maneuverability. Write for bulletins.

STERLING WHEELBARROW CO.
MILWAUKEE 14, WIS., U. S. A.

No. 160 Truck to receive castings from Wheelabrator, Roto Blast or similar equipment.



No. 110 A Core Truck equipped with pneumatic tired wheels and ball bearing swivel casters.



No. 150 "Atlas" all welded steel truck for transporting extra heavy loads. Low platform. Sturdy 1" pipe stakes.

Sterling
FOUNDRY EQUIPMENT

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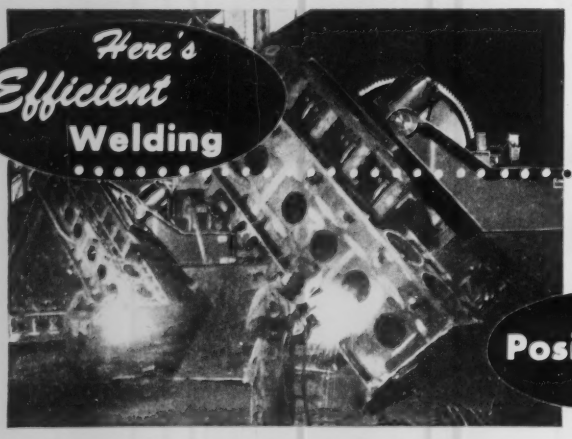

When heavy, unwieldy weldments like these diesel crankcases can be quickly swung into any position so that every weld is made *downhand*—that's efficient welding!

Welders spend more time welding — do better welding at lower cost when they work with C-F Positioners because these hand and or power operated machines reduce positioning time to a minimum. Investigate the cost-saving advantages of C-F Positioners. They pay their way in any company.

Write for Bulletin WP26 — an illustrated circular detailing the Specific advantages of C-F Positioners.

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CULLEN-FRIESTEDT CO., CHICAGO 23, ILL.

C-F positioned welds mean better, more economical welds

the Pacific Northwest. Bethlehem Pacific Coast Steel Corp.'s West Seattle furnaces and rolling mill are again on a peacetime basis, about 70 per cent of capacity. This is the lowest operating rate since beginning of World War II.

Foreign Steel Demand Slips

New York—Foreign steel arrivals are holding up better than orders. A good portion of the tonnage coming in was placed some time ago. With freer domestic supplies, however, orders have dropped off, and in some lines import prices are soft such as on commercial bars, reinforcing bars and small angles.

On the other hand, some products are strong, notably large shapes. Imported wide flange sections are being snapped up quickly. But deliveries are backing up, certainly are not improving. Some foreign mills now have little to offer under 3 to 4 months.

So far freight absorption by domestic mills has affected importers' competitive position little, in some markets not at all.

Plates . . .

Plate Prices, Page 182

Boston—Demand for wider light gage plate is stronger. Fabricating shops have to shop to place requirements without paying premium prices. Most consumers are covered on carbon plate needs for balance of this year. More interest is apparent in first quarter.

New York—Plate fabricators have improved their inventory position but demand is fairly active. Flange work is holding up well. Certain premium-price mills have some capacity open for this quarter.

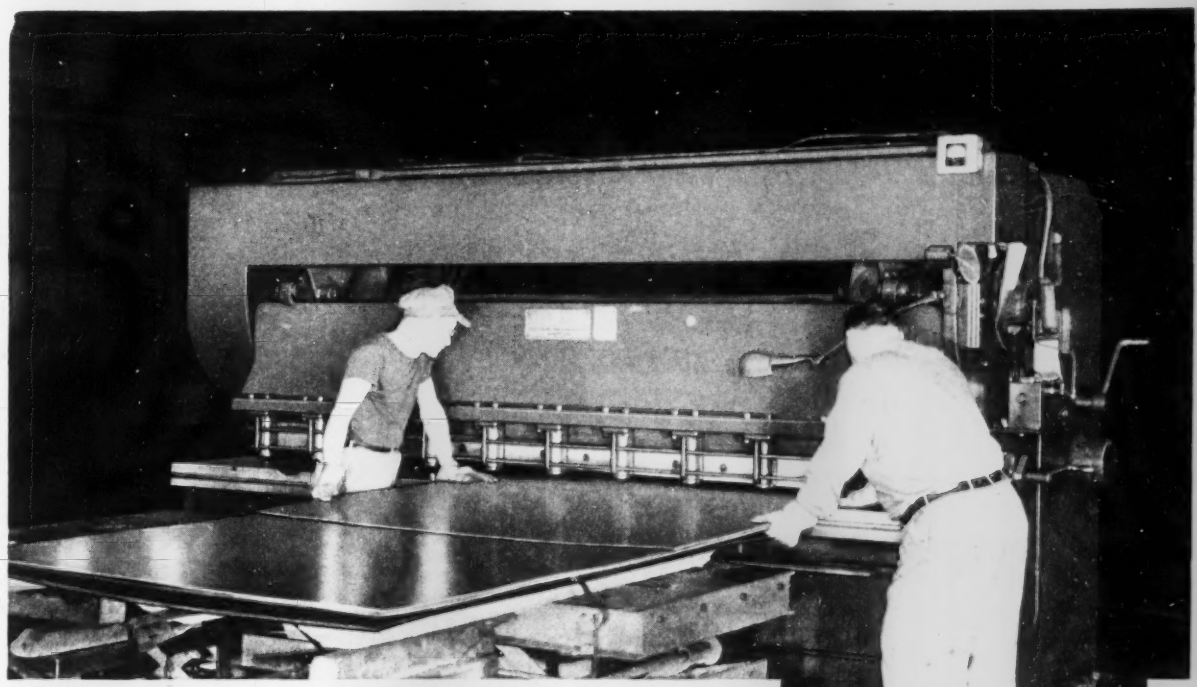
Philadelphia—Certain premium-price plate mills can enter tonnage for December rolling. In general it appears there will be little carryover at turn of the year. However, some plate fabricators are scraping bottom on inventories and early placements will be necessary.

While business is definitely off, plate demand is still far from dull. Larger tank fabricators' stocks, sizewise, are out of balance.

Pittsburgh—Gradual easing in plate supply continues. Consumers report improving delivery.

San Francisco—Offerings of plates are being made in this area by eastern mills.

Seattle—Plate fabricators await subcontracts for the Army's Alaskan petroleum pipeline, involving in excess of 42,000 tons of plates, several thousand tons of shapes, reinforcing and other items.



High Production Shearing is done at The S. K. Wellman Co., Cleveland, with this No. 110 Steelweld Shear.

For High Production Shearing **STEELWELDS are "TOPS"**

"What makes Steelweld Shears tops?", you ask. "Why are they so outstanding for high production shearing?" Here are some reasons:

1 EASY, FAST OPERATION Electric foot control, standard on Steelwelds, enables shearing speeds not attainable with ordinary mechanical foot treadles. Easily operated by a mere touch of the toe, it can be moved on floor to wherever most convenient.

2 SMOOTH, CLEAN CUTS Unusually smooth, clean cuts are obtained because of Steelweld's exclusive pivoted-blade cutting action. The upper knife travels in a circular path and pulls away from lower knife immediately after shearing. This prevents binding of cut pieces between back gauge and knife. Knife wear is reduced.

3 QUICK, SIMPLE KNIFE ADJUSTMENT Best possible cut for any thickness plate can be made, because of Steelweld's exclusive Micro-Set knife clearance adjustment which can be made in a few seconds.

4 CONVENIENT, ACCURATE BACK GAUGE Before the gauge at rear of an ordinary shear can be reached, a Steelweld back gauge is usually set and the machine in operation, because the adjustment is on the outside of frame near front where conveniently reached. Ball bearing equipped, it is easily operated and accurate.

5 MAXIMUM PRODUCTION Steelweld shears are built for heavy-duty high production work. The one-piece welded steel frame and all operating parts are liberally designed to provide extra stamina. Servicing is simple. All parts are easily accessible. As a result, downtime is minimum and production maximum.

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Reinforcing Bars . . .

Reinforcing Bar Prices, Page 182

Pittsburgh — Reinforcing bar demand from the construction industry remains strong, but supply is easing. This is due to entrance into this field by new companies.

Seattle—Award of 1450 tons of reinforcing bars for an addition to Scott Paper Co.'s plant at Everett, Wash., is the largest tonnage placed here in weeks. Bethlehem Steel reduced rolling mill operations to prewar levels, but Northwest Steel Rolling Mills continues to operate on an unchanged basis.

Wire . . .

Wire Prices, Page 184

Atlanta, Ga. — Lower rail freight rates within the Southeast and between the East and Southeast, expected to become effective Nov. 5, are directing attention to Likely savings opened to steel buyers as result of the changes.

In conjunction with the lower rates, minimum carload weights will be revised to 40,000 pounds and 80,000 pounds. The new 80,000-pound minimum rate is reported approximately 10 per cent cheaper than the new 40,000-pound minimum rate. In view of this, mills are suggesting buyers review orders already placed with the mills or planned for the future with a view to getting full benefits from the revised freight rates and minimm carload weights.

Boston—Wire consumers are on somewhat heavier schedules with inventories down to 60 days, and, in some cases, nearer 30 days. Most orders are placed for prompt delivery. Forward buying is cautious, even for December. Capacity for November is not filled on many wire products, notably textile and rope wire.

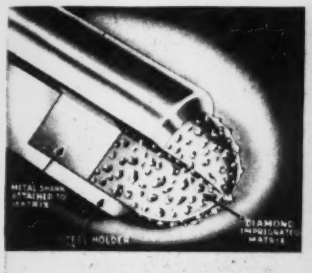
Tubular Goods . . .

Tubular Goods Prices, Page 185

Denver — Construction of a gas pipeline to Las Vegas and Henderson, Nev., will be started soon by the Nevada Natural Gas Pipe Line Co. The line will connect with that of the El Paso Natural Gas Co. near Needles, Calif., extending approximately 110 miles to Las Vegas.

Pittsburgh Mill sales are returning to normal as inventory cutbacks have almost run their course. Interest in tubular products is greater than had been predicted a month ago, except in the case of warehouses which have been reducing their buying.

Seattle—Inquiry for cast iron pipe



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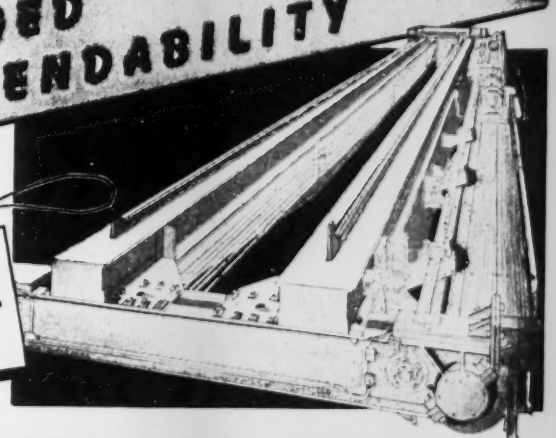

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is slow. Small lots are moving out of stock.

Tin Plate . . .

Tin Plate Prices, Page 184

Los Angeles—Pacific Can Co., San Francisco, plans a $2 million plant here with daily capacity of 6 million cans.

Structural Shapes . . .

Structural Shape Prices, Page 182

Pittsburgh—Extra allotments of shapes are available in this area. Bridge and highway projects continue heavy. Easing in supply is expected to be short term. Wide flange beams remain hard to get. The Pennsylvania State Highway Department asked for bids on the substructure of Fort Pitt bridge by Nov. 19.

Boston—Larger fabricators are booked into second quarter and smaller units around three months, but sharper competition has lowered prices for steel in place about 6 per cent from earlier peaks. This holds for bridge tonnage. For smaller private construction the decline is slightly more. Lower prices come from profits.

New York—Considering the season, structural demand is holding up well. Most fabricators hold good backlogs and, with new work expected, they see active operations for months ahead. Private building is expanding in relation to public work.

Philadelphia—Structural market activity is featured by a flurry of state bridge work, several projects being up for figuring later this month.

Seattle—About 1500 tons of structural shapes await placement. New business is coming out slowly.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 203

Cleveland—Spotty foundry operations, coupled with consumer determination to hold inventories down, are reflected in sluggish demand for oven coke. Supplies are plentiful, and while no excessive surplus exists, sellers have to push much harder to garner an order. This is a new experience for some salesmen, one of whom is quoted as saying that wherever he calls it seems someone has been there just the day before seeking to sell coke.

The supply situation is not as bad as it appears at first glance, since consumption continues heavy despite curtailed foundry operations. In fact, some foundries on automotive and machine tool castings are doing well. The same can be said for some light

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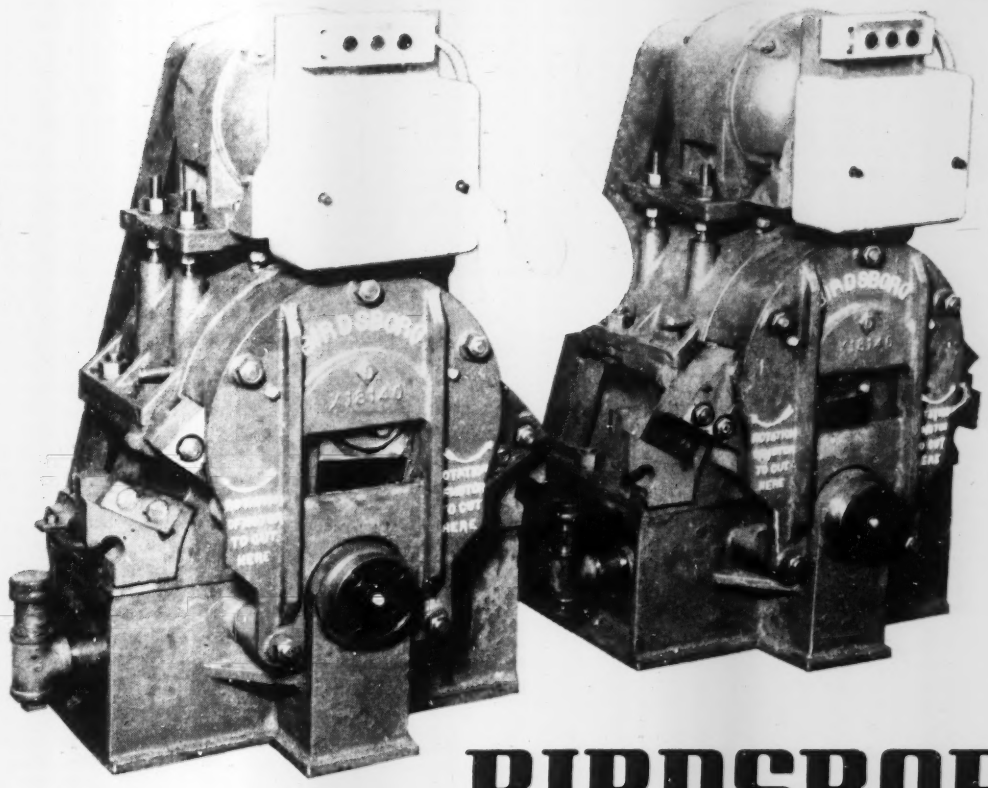

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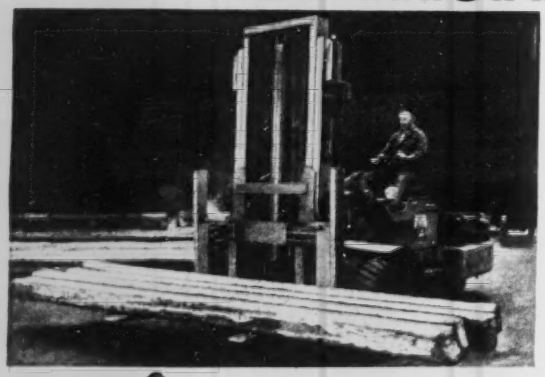

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castings shops on appliance work. As a result, coke is moving steadily from ovens and no sign of price shading has yet appeared.

Chicago—Lower foundry melt is restricting demand for coke. Cupola operators also have bought sparingly recently while they whittle down better than average stocks.

Pig Iron . . .

Pig Iron Prices, Page 186

New York — Blast furnace output in September was next to the lowest for any month this year.

Output was 6,202,019 net tons, the American Iron & Steel Institute reports. Only month lower this year was February, when production was 5,881,518 tons.

Furnaces operated at 95.2 per cent of capacity in September, compared with 96 per cent in August. Rate for this year through September averaged 96.8 per cent.

Total furnace output in the first nine months of this year totaled 57,503,609 net tons. This is comprised of 56,855,327 tons of pig iron and 648,282 tons of ferroalloys. Through the first nine months of the strike-afflicted year of 1952, blast furnace production totaled 42,906,676 net tons.

Details and comparisons of 1953 production follow:

BLAST FURNACE OUTPUT

(Net Tons)

1953	Pig Iron	Ferroalloys	Total
Jan	6,482,081	82,302	6,564,383
Feb	5,813,202	68,316	5,881,518
Mar	6,611,040	66,321	6,677,361
Apr	6,171,939	58,702	6,230,641
May	6,519,082	68,033	6,587,115
June	6,297,559	74,972	6,372,531
1st Half	37,894,903	418,646	38,313,549
July	6,436,345	80,142	6,516,487
Aug	6,391,749	79,805	6,471,554
Sept.	6,132,330	69,689	6,202,019
1952			
Sept	6,095,865	68,500	6,164,365

New York—Pig iron demand shows no improvement. Inventories are shrinking but there is little effort to build them up.

Philadelphia—Foundry pig iron still moves sluggishly. District foundries are averaging no more than 4-days-a-week operations. Not much improvement is in sight. Basic iron continues to move well.

Cleveland—Foundry operations are spotty but some shops are maintaining operations on a relatively high level, especially certain plants producing automotive and machine tool castings. Some light casting plants on appliance work also are doing well. However, shops are not under pressure, and, as a result, they are watching raw material inventories closely. Pig iron buying by melters is sluggish, but no reports are heard of price shading or of excess stocks.

Chicago—Easier demand for pig

(*Please Turn to Page* 205)

It has been eight years (and several hundred purchase orders) since Ohio Ferro-Alloys pioneered the development and production of Special Blocking 50% Ferro-Silicon. Developed for faster blocking and more effective penetration of the slag, our product has helped open hearth producers reduce blocking costs, cut material handling and reduce inventory requirements... Order now for prompt delivery of this time-tested product.

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CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeldsen: (19-21% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $87 Clairton and Duquesne, Pa.
(16 to 19% Mn) $84 per ton, Palmerton, Pa.; $85 per ton, Clairton and Duquesne, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton $200, Clairton, Duquesne, Johnstown and Sheridan, Pa.; add or subtract $2.60 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.
(Mn 76-80%) 13.15c per pound of contained Mn, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland Oreg.
(Mn 79-81%) Lump $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max. 0.15% C grade from above prices, 1c for max. 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max, C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 31.5c; ton lots 33.5c; 250 to 1999 lb, 35.5c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max, Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%). Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High Carbon Ferrochrome: Contract, c.l. lump, bulk 21.75c per lb of contained Cr; c.l. packed 23.6c; ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%). Contract, carload, lump, bulk, max. 0.025% C (Simplex) 34.50c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%). Contract, c.l. S M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max). Contract, carload, packed, S M x D, 18.35c per lb of alloy, ton lot 19.2c, less ton lot, 20.4c; delivered, spot, add 0.25c.

Low Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.06% max). Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon, f.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr 36-39%, Si 26-30%, Al 7.9%, C 0.05% max). 25.75c per lb of contained chrome plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract, 1" x D, packed, max 0.50% C, carload $1.12, ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $2.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max): $3.10. **Primos and High Speed Grades** (V 35-55%, Si 1.50% max, C 0.20% max): $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.25 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump bulk, 20.0c per lb of contained Si, packed 21.0c, ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) c.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max. 0.10% calcium grade. Deduct 0.3c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max). Contract, c.l. lump, bulk, 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot add 5c. F.o.b. Washington, Pa., prices, 100 lb and over are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot, add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot, add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3½ lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.6c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb of briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size—weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet. Packed c.l. 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.
(Small size—Weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c. Packed c.l. 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquetts: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.o.b. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 10,000 lb W or more, $1.35 per lb of contained W; 2000 lb W to 10,000 lb W, $1.45; less than 2000 lb W, $4.57, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max, C 0.4% max). Contract, ton lot, 2" x D, $6.40 per lb of contained Cb, less ton $6.45. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx., Ta 20% approx., and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%), c.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%), c.l. packed 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

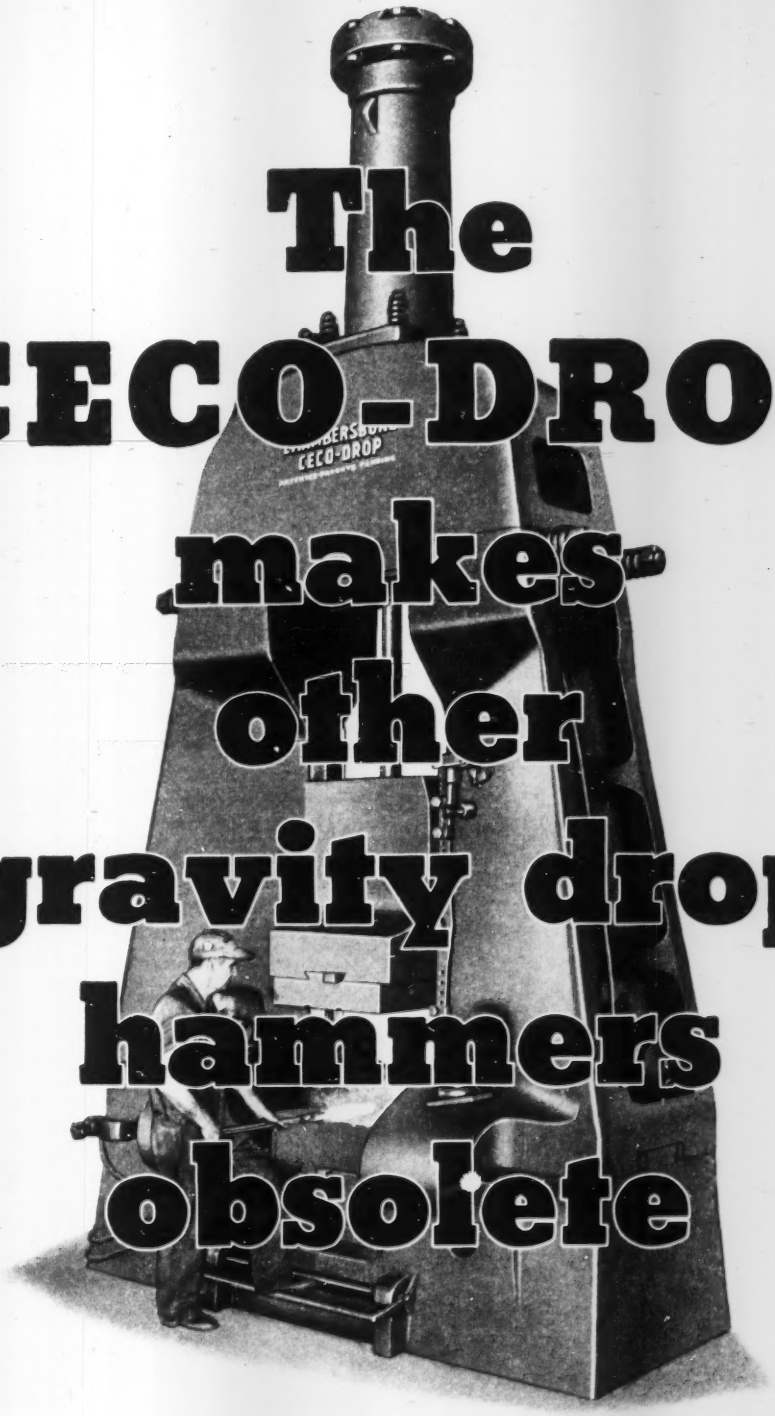
Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe). Lump, carload, bulk 14.50c. Packed c.l. 15.50c, ton lots, 15.75c, less ton lots, 16.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb. contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

The CECO-DROP makes other gravity drop hammers obsolete



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"FORGING IN MID-AIR"

CHAMBERSBURG ENGINEERING CO., CHAMBERSBURG, PA.

INDIVIDUAL VULCANAIRE
DUST COLLECTING UNITS

They are used on surface and other grinders where grinding dust must be removed.

Inexpensive, compact units, with no moving parts. Operated from your present air supply.

Installed in a few minutes, eliminating need for costly centrally located dust collecting systems.

The collector element is mounted on the side of the machine. Quickly cleaned, requiring no refills.

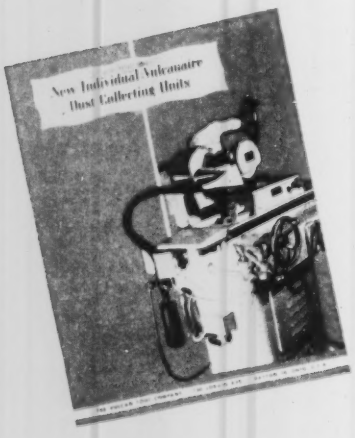
Vac-suction pick-up device (vacuum nozzle) is mounted on the grinding wheel guard or close to grinding wheel on other applications. This mounting permits constant contact with dust as the wheel is moved up or down.

A simple needle valve operates the unit, and can be shut off whenever the machine is not in use.

Available in 700 series for grinding wheels 7" dia. or less.

Made by the makers of Vulcanaire The jig grinding attachment.

WRITE on your letterhead for "Dust Collector" Booklet.



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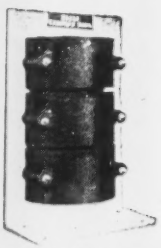
the BASCO SEPARATOR
automatically "fans out" Steel Sheets for easier, faster, safer handling!



Models for any thickness to 3/16"

BASCO lifts the top sheet instantly — automatically raising and separating the next sheet for easy grasping.

• Separates oily sheets • Lifts polished or painted parts without scratching • Eliminates feeding double sheets • Saves gloves—cuts • Handles round, nested or odd shapes • *Permanence of magnetism guaranteed.*

TEST A BASCO IN YOUR PLANT — SOLD ON APPROVAL

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23 Woodside Street • Stamford, Conn.

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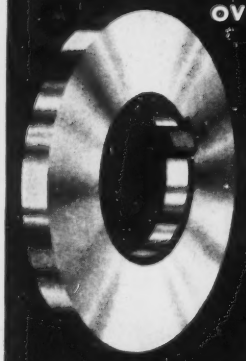


Standard for Service and Durability. Ground to extremely close Tolerances and Finish. Made by *Toolmakers.*

COWLES TOOL COMPANY

2086 W. 110th ST. CLEVELAND 2, OHIO

ORES–COKE–REFRACTORIES

Prices as reported to STEEL; changes shown in italics.

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit deld. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematite (spot)	24.00-26.00
Brazilian iron ore, 68-69% (spot)	25.00-26.00

Tungsten Ore

Net ton unit, before duty

Foreign Wolframite, min. 65%, WO_3, good commercial quality	$39-$40
Domestic scheelite, mine	63.00

Manganese Ore

Mn, 48% nearby, $1.18-$1.21 per long ton unit, c.i.f. U. S. ports, duty for buyers' account; shipments against old contracts for 48% ore are being received from some sources at 90-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.:

		Indian and African	
48%	2.8:1		$40.00-$42.00
48%	3:1		44.00-46.00
48%	no ratio		32.00-34.00
		South African Transvaal	
44%	no ratio		$27.00-$28.00
48%	no ratio		34.00-35.00
		Brazilian	
44%	2.5:1	lump nom.	$32
		Domestic	
		(Rail nearest seller)	
48%	3:1		$39.00

Molybdenum

Sulphide concentrate, per lb. Mb content, mines, unpacked	$1.00

Antimony Ore

Per unit of Sb content, c.i.f. seaboard

50-60%	$2.40-$2.80
65% min.	$3.40-$3.50

Vanadium Ore

Cents per lb. V_2O_5 content, deld. mills

Domestic	31.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lock Haven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vanadalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109; Salina, Pa., $114; Niles, O., $120; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115; Warren, O., Hays, Pa., $120; Niles, O., $123; E. Chicago, Ind., Joliet, Rockdale, Ill., $125; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2700° F.: Massillon, O., $178.50; Clearfield, Pa., $213; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $206; Vandalia, Mo., $214.10; Portsmouth, O., $207.50; Bessemer, Ala., $212.80.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $129.70; Johnstown, Pa., $140; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $174; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 *Per Cent*: Clearfield, Pa., St. Louis, Mexico, Mo., $179; Danville, Ill., $169.30.

60 *Per Cent*: St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.

70 *Per Cent*: St. Louis, Mexico, Vandalia, Mo., $225; Danville, Ill., $258; Clearfield, Pa., $252.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, York, Pa., Millville, W. Va., Bettsville, Millersville, Martin, Narlo, Gibsonburg, Woodville, O., $14.50; Thornton, McCook, Ill., $14.60; Dolly Siding, Bonne Terre, Mo., $13.65.

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connellsville, foundry	16.50-17.00

Oven Foundry Coke

Kearney, N. J., ovens	$24.00
Everett, Mass., ovens:	
New England, deld.	*26.00
Chicago, ovens	24.50
Chicago, deld.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, deld.	28.12
Cincinnati, deld.	25.85
Painesville, O., ovens	25.50
Cleveland, deld.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	22.65
Cincinnati, deld.	27.58
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens:	
St. Louis deld.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, deld.	26.62
Detroit, ovens	25.50
Detroit, deld.	26.50
Buffalo, deld.	28.08
Flint, deld.	28.23
Pontiac, deld.	27.06
Saginaw, deld.	28.58

*Or within $1.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	40.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$41-45
Birmingham area	$49.50

Cents per pound, ovens

Phenol, 40 (c.l., nonreturnable drums)	17.25

FLUORSPAR

Metallurgical grades, f.o.b. shipping point in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38. Imported, net ton, duty paid, metallurgical grade, $35-$36.

ELECTRODES

(Threaded with nipple, unboxed f.o.b. plant)

GRAPHITE

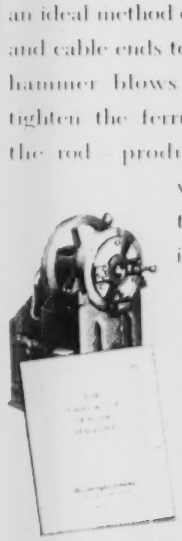
Diam. (Inches)	Length	Per 100 lb
2	24	$43.50
2½	30	28.00
3	40	27.25
4	40	26.00
5½	40	25.75
6	60	23.25
7, 8, 9, 10	60	21.00
12, 14	72	20.50
16	72	20.00
17	60	20.50
18	72	20.50
20	72	20.00

CARBON

40	100		$8.95
40, 35, 30	110		8.95
30	84		9.10
24	96		8.90
24	72, 84		9.10
20	90		8.95
20	84		9.10
17	72		9.10
17	60		9.50
14	72		9.40
14, 12, 10	60		10.30
8	60		10.50

for a tighter hold

Torrington Swaging Machines offer an ideal method of attaching ferrules and cable ends to wire or rod. Rapid hammer blows (4060 a minute) tighten the ferrule quickly around the rod—producing a bond that withstands as much tensile strain as the inner member alone.



"The Torrington Swaging Machine" tells you how to do a better job of shaping many metal parts, and save money, too. It also describes the complete line of Torrington machines. Write for your free copy ... today!

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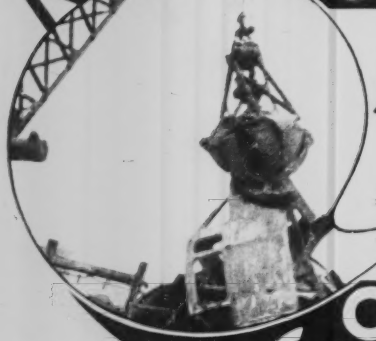

OWEN GRAPPLES

are setting a feverish pace in the handling of this scrap iron from cars or trucks to baler and on to users.

Due to their unique and exclusive operating principle, OWEN Scrap Grapples reduce handling time and operating costs regardless of the shape, thickness, or size and weight of the automotive scrap.

Write for full particulars on the OWEN HI-SPEED SYSTEM.

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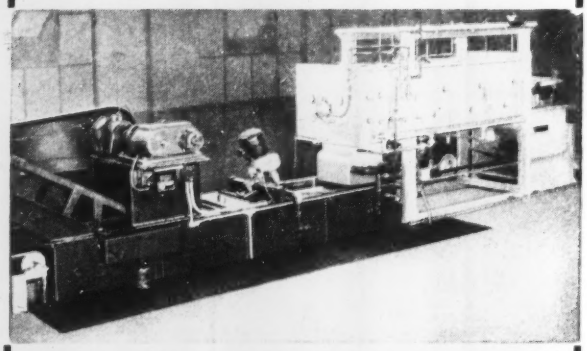

This AGF No. 166 RECIPROCATING FURNACE and QUENCH TANK has a capacity of 150 to 300 lbs. of work per minute. It is only one of five standard sizes.

In addition to *Ni-Carbing, versatile AGF Reciprocating Furnaces can be used without modification for clean hardening, carburizing, and other controlled atmosphere processes for a wide variety of parts ranging from pen points to drop forgings.

*The Original Ammonia-Gas Case Hardening Process.
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STEEL can put you in touch with the important ones, those that do more than 92% of the industry's business. Tell the buyers and specifiers in these plants of the machines or materials you have for sale through an "Equipment—Materials" advertisement. For rates write STEEL, Penton Building, Cleveland 13, Ohio.

Pig Iron . . .

(*Concluded from Page* 198)

iron has taken the pressure off for return of blast furnaces to activity when they go down for repairs. Currently, only 39 of 43 stacks in the district are blowing.

Scrap . . .

Scrap Prices, Page 208

Philadelphia — Steelmaking scrap prices have taken a definite upward turn. No. 1 heavy melting steel, No. 1 busheling and No. 1 bundles are holding at $35, delivered, consumer plant. No. 2 heavy melting steel $32, No. 2 bundles $30, electric furnace bundles $36 to $37.

The Fairless, Pa. consumer has closed on moderate tonnages of No. 2 heavy melting and No. 2 bundles, paying approximately $5 more a ton than for its last purchase of these grades a few weeks ago. Other mills have placed modest tonnages at the new levels.

In general, buying has not been heavy, but the market undertone is stronger. This strength is indicated also by higher prices on other grades.

Open-hearth operations at John A. Roeblings' Sons' Co., subsidiary of Colorado Fuel & Iron Corp., at Trenton, N. J., were resumed Nov. 3 after having been suspended for 10 days due to generator trouble.

General Steel Castings Co., Philadelphia, has been closed by a strike since Oct. 29. Two of the three 50-ton open hearths were in operation at the time of the walkout.

New York — Brokers have increased buying prices on No. 2 heavy melting to $24.50 to $25 and on No. 2 bundles to $22.50 to $23.50, reflecting recent consumer purchases. They have not increased prices on No. 1 heavy melting and No. 1 bundles, unchanged at $27 to $28. Low phos scrap also is unchanged. Mixed borings and short turnings are up sharply to $18 to $19, and short shovel turnings to $19 to $20. Machine shop turnings are unchanged at $14 to $15. Cast grades are steady.

Buffalo — Two leading mill consumers re-entered the scrap market last week with orders to boost steelmaking and blast furnace grades $1.50 to $3 per ton. Dealer sentiment is improved.

Pittsburgh — The scrap market is firmer. Several grades are moving more rapidly. No. 2 heavy melting and No. 2 bundles advanced $3 a ton last week. One small purchase of No. 1 heavy melting was carried out at a price $1 above the quoted $36 to $37 mark. Plans for exporting scrap have an indirect effect here.

Cleveland — Despite limited buying and slipping steelmaking operations in adjacent districts, the scrap market undertone is firmer. In the absence of representative sales, current higher prices reflect broker-dealer views, and are largely nominal.

Detroit — Scrap prices are in a state of flux following a display of strength in automotive lists. Dealers' offerings are moving at considerably lower levels than the auto scrap. The result is a marked softening in the area sales volume.

With heavy supplies of scrap, a number of electric furnaces being taken off and demand for carbon steel slackening, the long term trend in scrap here appears downward.

Cincinnati — Prices appear fairly strong with selected rises of $2 a ton. Local buying is at a standstill.

Chicago — Reflecting developments in the East is a stronger scrap market tone here, but so far it hasn't been translated into higher consumer buying prices. Dealers are seeking higher prices and users are displaying no interest, putting brokers in the middle. Important grades are holding at levels established two weeks ago in the purchase of a leading mill. Turnings and borings, listless for some time, have advanced $1 to $2.

St. Louis — A sizable mill purchase established a $32 broker's buying price for heavy melting steel, up $3 from a week ago. No. 1 bundles took a similar rise. This corrected an unusual situation created when another mill purchase earlier boosted No. 2 steel to a parity with old quoted prices on No. 1.

Birmingham — Further slight firmness in scrap is noted. Small tonnages of No. 2 heavy melting are moving. The cast market is tight due to the fact little tonnage is moving to local yards.

Los Angeles — Steel production cutbacks have lessened steelmaking scrap demand. Movement to mills is lighter, but prices are holding.

San Francisco — There is no upward pressure on steel scrap prices. Bullishness in eastern and midwestern areas is not communicated here.

Seattle — Expectations of sizable export shipments have given the local scrap market a bullish tone. Last week some dealers advanced asking prices $5 to $10 per ton. Dealers claim higher prices are obtainable in offshore markets, though exporters state Japanese buyers are interested only in grades in good demand here.

Reports are heard of asking prices of $43 for No. 1 cupola and $34 for heavy breakable. One lot of 600 tons of cast iron went to the Orient via British Columbia.

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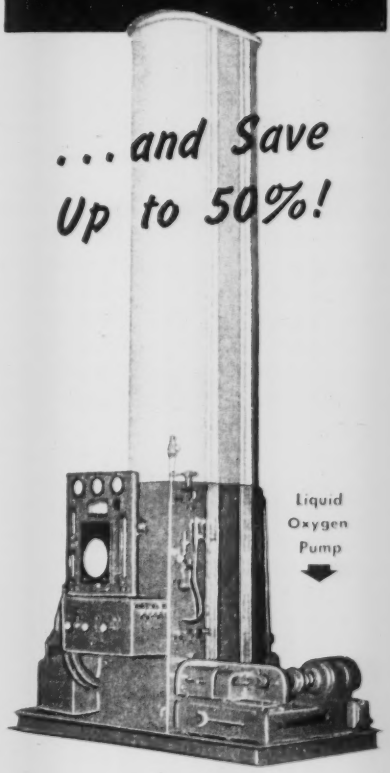

With INDEPENDENT'S newly designed generators, you can make your own high purity oxygen and nitrogen from **the free air** . . . and in the **same generator.**

You reduce costs up to 50% by eliminating handling costs . . . vaporizing costs . . . evaporation losses . . . residual losses . . . and transportation costs.

INDEPENDENT Generators are available in any **capacity,** any **purity** and any **pressure.** Put your oxygen-nitrogen problem up to us . . . our engineering department will gladly submit recommendations . . . no obligation, of course!

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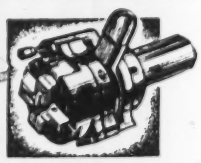

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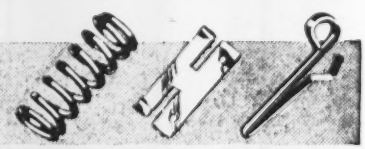

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Canada . . .

Toronto, Ont.—Production of ingots and steel for castings in Canada during August totaled 338,703 net tons, comparing with 323,385 in July and 298,913 in August a year ago. For the eight months ended August, production was 2,785,194 net tons. In the like 1952 period 2,507,236 net tons were produced.

Pig iron output in August was 267,219 net tons, and compares with 272,598 in July and 221,387 in August, 1952. In first eight months this year 2,027,791 tons of iron were produced.

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STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

1240 tons, state bridge, Luzerne and Lackawanna counties, Pennsylvania, through Gasparani Contracting Co., Scranton, Pa., to Pine Brook Iron works, that city.

600 tons, warehouse, Quaker Oats Co., Shiremanstown, Pa., to the Dauphin Steel Engineering Co.

STRUCTURAL STEEL PENDING

1190 tons, state bridge work, Chester and Montgomery counties, Pennsylvania; bids Nov. 19; also 845 tons of reinforcing bars.

1800 tons, state bridge work, Allegheny county, Pennsylvania; bids to be closed by the State Highway & Bridge Authority Nov. 20.

900 tons, Kaiser gypsum plant, Seattle; bids opened in Oakland, Calif., Nov. 2.

750 tons, shop building, Philadelphia Electric Co., Philadelphia; bids asked.

405 tons, state bridge work, Lancaster and Chester counties, Pennsylvania; bids Nov. 20.

400 tons, plate girder bridge, Billerica, Mass.; bids Nov. 10.

357 tons, state bridge, Butler county, Pennsylvania; bids Nov. 20; also 166 tons of reinforcing bars.

354 tons, state bridge work, Allegheny county, Pennsylvania; bids Nov. 20.

345 tons, state bridge work, Chester and Montgomery counties, Pennsylvania; bids Nov. 20; also 3190 tons of structurals.

250 tons, substation steel; bids to Bonneville Power Administration, Portland, Oreg., Nov. 13.

200 tons, Army shops at Whittier, Alaska; general contract to J. H. Pomeroy & Co., Seattle.

175 tons, eight steel frame structures, Hanford Works; general contract to L. H. Hoffman, Portland, Oreg.

166 tons, state bridge work, Butler county, Pennsylvania; bids Nov. 20; also 357 tons of structurals.

158 tons, state bridge, Westmoreland county, Pennsylvania; bids Nov. 20.

142 tons, state bridge work, Brooks county, Pennsylvania; bids Nov. 19.

130 tons, bridge, Northampton county, Pennsylvania; bids Nov. 20.

106 tons, state bridge work, Montgomery county, Pennsylvania; bids Nov. 19.

REINFORCING BARS . . .

REINFORCING BARS PLACED

1150 tons, Scott Paper Co. plant addition, Everett, Wash., to Northwest Steel Rolling Mills Inc., Seattle.

PLATES . . .

PLATES PLACED

500 tons, 19,480 ft welded steel water pipe, 36 and 20 in., Pasco, Wash.; to Beall Pipe & Tank Corp., Portland, Oreg.

200 tons, 150 tube testing tanks for U. S. Air Force, to Flohr & Co., Seattle.

PLATES PENDING

12,000 tons or more, also cast iron pipe and other steel items, 610-mile 8-in. pipeline, also pump houses and terminals, Haines to Fairbanks, Alaska, petroleum products pipeline; general contract to Williams Bros., Tulsa, Okla.; McLaughlin Inc., Great Falls, Mont.; and Marwell Construction Co., Vancouver, B. C.; joint low bidders, $29,001,287.

750 tons, South 160th street, 36 and 24 in. water pipe line extension, Seattle; Thorburn & Logozo, Seattle, low $226,934; alternative $251,373.

500 tons, large diameter steel pipe waterline, Newton, Mass.; bids to Metropolitan District Commission, Boston.

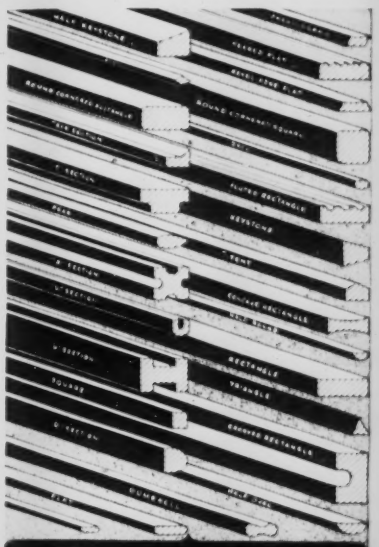
RAILS, CARS . . .

LOCOMOTIVES PLACED

The Alaska railroad, six 1500-hp diesel units to the Electro-Motive Division, General Motors Corp., La Grange, Ill.

RAILROAD CARS PLACED

Mozambique Railway, Portuguese East Africa, 295 forty-metric-ton gondola cars, to Magor Car Corp., New York.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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics

STEELMAKING SCRAP COMPOSITE

Nov. 5	$35.00
Oct. 29	33.83
Oct. avg.	32.75
Nov. 1952	43.00
Nov. 1948	43.25

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania

PITTSBURGH

(Delivered consumer plants)

No. 1 heavy melting	36.00-37.00
No. 2 heavy melting	*41.00-45.00*
No. 1 bundles	36.00-37.00
No. 2 bundles	*42.00-44.00*
No. 1 busheling	36.00-37.00
Machine shop turnings	21.00-22.00
Mixed borings, turnings	21.00-22.00
Short shovel turnings	*25.00-26.00*
Cast iron borings	24.00-25.00
Cut structurals	*40.00-41.00*
Heavy turnings	*41.00-42.00*
Punchings & plate scrap	*40.00-41.00*
Electric furnace bundles	*40.00-41.00*

Cast Iron Grades

No. 1 cupola	39.00-40.00
Charging box cast	38.00-39.00
Heavy breakable cast	36.00-37.00
Unstripped motor blocks	33.00-34.00
No. 1 machinery cast	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt	39.00-40.00
Rails, 2-ft and under	50.00-51.00
Rails, 18-in. and under	51.00-52.00
Rails, random lengths	44.00-45.00
Railroad specialties	42.00-43.00

Stainless Steel Scrap

18-8 bundles & solids	165-170
18-8 turnings	90-95
430 bundles & solids	87-90
430 turnings	60-62

CLEVELAND

(Delivered consumer plants)

No. 1 heavy melting	*$43.00-44.00*
No. 2 heavy melting	*39.00-40.00*
No. 1 bundles	*43.00-44.00*
No. 2 bundles	*37.00-38.00*
No. 1 busheling	*43.00-44.00*
Machine shop turnings	*18.00-19.00*
Mixed borings, turnings	23.00-24.00
Short shovel turnings	23.00-24.00
Cast iron borings	23.00-24.00
Low phos.	*44.00-45.00*
Alloy free, short shovel turnings	25.00-26.00
Electric furnace bundles	*43.00-44.00*

Cast Iron Grades

No. 1 cupola	*43.00-44.00*
Charging box cast	*41.00-42.00*
Stove plate	*48.00-49.00*
Heavy breakable cast	*37.00-38.00*
Unstripped motor blocks	*36.00-37.00*
Brake shoes	*37.00-38.00*
Clean auto cast	*46.00-47.00*
No. 1 wheels	*41.00-42.00*
Burnt cast	*41.00-42.00*
Drop broken machinery	*46.00-47.00*

Railroad Scrap

No. 1 R.R. heavy melt	36.00-37.00
R.R. malleable	45.00-46.00
Rails, 3-ft and under	50.00-51.00
Rails, 18-in. and under	50.00-51.00
Rails, random lengths	43.00-44.00
Cast steel	42.00-43.00
Railroad specialties	42.00-43.00
Uncut tires	40.00-41.00
Angles, splice bars	45.00-46.00
Rails, rerolling	49.00-50.00

Stainless Steel

(F.o.b. shipping point)

18-8 bundles, solids	nom. 160.00-170.00
18-8 turnings	nom. 70.00-80.00
430 clips, bundles, solids	nom. 70.00
430 turnings	nom. 50.00

YOUNGSTOWN

(Delivered consumer plants)

No. 1 heavy melting	35.00-36.00
No. 2 heavy melting	33.00-34.00
No. 1 bundles	*45.00-46.00*
No. 2 bundles	*42.00-43.00*
Machine shop turnings	17.00-18.00
Short shovel turnings	25.00-26.00
Cast iron borings	25.00-26.00
Low phos.	36.00-37.00
Electric furnace bundles	36.00-37.00

Railroad Scrap

No. 1 R.R. heavy melt	37.00-38.00

PHILADELPHIA

(Delivered consumer plants)

No. 1 heavy melting	*$5.00*
No. 2 heavy melting	*$2.00*
No. 1 bundles	*$5.00*
No. 2 bundles	*$0.00*
No. 1 busheling	*$5.00*
Electric furnace bundles	*$6.00-$7.00*
Machine shop turnings	*$2.00*
Mixed borings, turnings	*$5.00*
Short shovel turnings	*$8.00*
Structurals & plate	36.00-37.00
Heavy turnings	*nom. $8.00*
Couplers, spring wheels	*$2.00*
Rail crops, 2 ft 2 under	*$6.00-$8.00*

Cast Iron Grades

No. 1 cupola	35.00-36.00
Charging box cast	nom.
Heavy breakable cast	*$0.00*
Unstripped motor blocks	28.00
Drop broken machinery	*$1.00-$2.00*

NEW YORK

(Brokers' buying prices)

No. 1 heavy melting	27.00-28.00
No. 2 heavy melting	*$24.50-25.00*
No. 1 bundles	27.00-28.00
No. 2 bundles	*$23.50-24.50*
Machine shop turnings	14.00-15.00
Mixed borings, short turnings	*$8.00-$9.00*
Low phos. structural & plate	29.50
Short shovel turnings	*$9.00-$0.00*

Cast Iron Grades

No. 1 cupola	29.00-30.00
Unstripped motor blocks	21.00-22.00

Stainless Steel

18-8 sheets, clips, solids	165.00-175.00
18-8 borings, turnings	85.00-90.00
430 sheets, clips, solids	80.00-85.00
410 sheets, clips, solids	70.00-75.00

BOSTON

(Brokers' buying prices, f.o.b. shipping point)

No. 1 heavy melting	25.00-26.00
No. 2 heavy melting	18.50-19.00
No. 1 bundles	24.00-25.00
No. 2 bundles	16.50-17.00
Machine shop turnings	12.00-12.50
Mixed borings, turnings	14.00-15.00
Short shovel turnings	15.00-16.00
No. 1 cast	29.00-30.00
Mixed cupola cast	27.00-28.00
No. 1 machinery cast	36.00-37.00

CINCINNATI

(Brokers' buying prices, f.o.b. shipping point)

No. 1 heavy melting	*$3.00-$4.00*
No. 2 heavy melting	28.00-29.00
No. 1 bundles	*$3.00-$4.00*
No. 2 bundles	25.00-26.00
No. 1 busheling	*$3.00-$4.00*
Machine shop turnings	*$6.00-$7.00*
Mixed borings, turnings	*$9.00-$0.00*
Short shovel turnings	*$9.00-$0.00*
Cast iron borings	*$9.00-$0.00*
Low phos., 1% up	39.00-40.00

Cast Iron Grades

No. 1 cupola	42.00
Heavy breakable cast	35.00
Charging box cast	45.00
Drop broken machinery	46.00

Railroad Scrap

No. 1 R.R. heavy melt	34.00-35.00
Malleable	42.00-43.00
Rails, 18-in. and under	48.00-49.00
Rails, random lengths	39.00-40.00

CHICAGO

No. 1 heavy melting	33.00-34.00
No. 2 heavy melting	28.00-29.00
No. 1 factory bundles	34.00-35.00
No. 1 dealer bundles	32.00-34.00
No. 2 bundles	26.00-27.00
No. 1 busheling	34.00-34.00
Machine shop turnings	*16.00-17.00*
Mixed borings, turnings	*17.00-18.00*
Short shovel, turnings	*18.00-19.00*
Cast iron borings	*18.00-19.00*
Cut structurals, 3-ft	37.00-38.00
Punchings & plate scrap	37.00-38.00
Electric furnace bundles	36.00-37.00

Cast Iron Grades

No. 1 cupola	*$3.00-$4.00*
Stove plate	*28.00-29.00*
Unstripped motor blocks	19.00-20.00
Clean auto cast	36.00-38.00
Drop broken machinery	36.00-38.00

Railroad Scrap

No. 1 R.R. heavy melt	35.00-36.00
R.R. Malleable	40.00-41.00
Rails, 3-ft and under	*46.00-47.00*
Rails, 18-in. and under	*48.00-49.00*
Angles, splice bars	40.00-42.00
Rails, rerolling	44.00-46.00

Stainless Steel Scrap

18-8 clips & solids	140.00-160.00
18-8 turnings	nom. 70.00
430 clips & solids	70.00
430 turnings	45.00

DETROIT

(Brokers' buying prices, f.o.b. shipping point)

No. 1 heavy melting	29.00
No. 2 heavy melting	23.00
No. 1 bundles	29.00
No. 2 bundles	22.00
No. 1 busheling	29.00
Machine shop turnings	14.00
Mixed borings turnings	14.00
Short shovel turnings	15.00
Punchings & plate scrap	30.00

Cast Iron Grades

No. 1 cupola	40.00
Charging box cast	33.00
Stove plate	34.00-35.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	40.00
Malleable	40.00

BUFFALO

No. 1 heavy melting	34.00-35.00
No. 2 heavy melting	*$1.00-$1.50*
No. 1 bundles	34.00-35.00
No. 2 bundles	*29.00-29.50*
No. 1 busheling	34.00-35.00
Machine shop turnings	*21.50-22.50*
Mixed borings, turnings	*23.50-24.00*
Short shovel turnings	*24.50-25.00*
Cast iron borings	*23.50-24.00*
Low phos.	*38.00-39.00*

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	33.00-34.00
No. 1 machinery	39.00-40.00

Railroad Scrap

Rails, random lengths	41.00-42.00
Rails, 2 ft and under	46.00-47.00
Railroad specialties	44.00-45.00

BIRMINGHAM

No. 1 heavy melting	26.00-26.50
No. 2 heavy melting	24.00-24.50
No. 1 bundles	26.00-26.50
No. 2 bundles	22.00-22.50
Machine shop turnings	19.50-20.50
Short shovel turnings	20.50-21.50
Cast iron borings	20.50-21.50
Cut structurals	nom.
Electric furnace bundles	nom.

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	41.00-42.50
Charging box cast	36.00-37.00
Stove plate	38.00-39.00
Rar crops and plate	38.00-39.00
Cut. structurals	36.00-37.00
Heavy breakable cast	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt	nom.
Rails 2 ft and under	42.00-43.00
Rails random lengths	39.00-40.00
Angles, splice bars	38.00-39.00
Rails, rerolling	46.00-47.00

ST. LOUIS

(Brokers' buying prices)

No. 1 heavy melting	*$2.00-$3.00*
No. 2 heavy melting	29.00-30.00
No. 1 bundles	*$2.00-$3.00*
No. 2 bundles	*27.00-28.00*
Machine shop turnings	13.00-14.00
Short shovel turnings	*14.00-15.00*

Cast Iron Grades

No. 1 cupola	36.00-37.00
Charging box cast	29.00-30.00
Heavy breakable cast	29.00-30.00
Unstripped motor blocks	28.00-29.00
Brake shoes	35.00-36.00
Clean auto cast	37.00-39.00
Burnt cast	39.00-31.00

Railroad Scrap

Malleable	37.00-38.00
Rails, 18-in. and under	44.00-45.00
Rails, random lengths	39.00-40.00
Rails, rerolling	*47.00-49.00*
Uncut tires	33.00-34.00
Angles, splice bars	36.00-37.00

SEATTLE

(delivered consumer plants)

No. 1 heavy melting	*$1.00*
No. 2 heavy melting	*27.00*
No. 1 bundles	24.00
No. 2 bundles	18.00
No. 3 bundles	15.00
Machine shop turnings	12.00-12.50
Mixed borings, turnings	12.00-12.50
Short shovel turnings	12.00-12.50
Electric furnace, No. 1	36.00-38.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	30.00-35.00
Heavy breakable cast	25.00-30.00
Unstripped motor blocks	27.00
No. 1 wheels	38.00-40.00
Stove plate	*29.00*

Railroad Scrap

(Delivered consumer plants)

Rails, random lengths	30.00-34.00

SAN FRANCISCO

No. 1 heavy melting	23.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	19.00
No. 1 busheling	24.00
Machine shop turnings	7.00
Mixed borings, turnings	7.00
Short shovel turnings	11.00
Cast iron borings	11.00
Cut structurals	28.00
Heavy turnings	11.00
Punchings & plate scrap	28.00
Electric furnace bundles	22.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	35.00
Stove plate	37.00
Heavy breakable cast	36.00
Unstripped motor blocks	29.00
Brake shoes	35.00
Clean auto cast	39.00
No. 1 wheels	39.00
Burnt cast	23.00
Drop broken machinery	43.00

LOS ANGELES

No. 1 heavy melting	23.00
No. 2 heavy melting	19.00
No. 1 bundles	22.00
No. 2 bundles	19.00
Machine shop turnings	7.00

Cast Iron Grades

(F.o.b. shipping point)

No. 1 cupola	*40.00-41.00*

HAMILTON, ONT.

(Delivered prices)

Heavy melting	$32.50
No. 1 bundles	32.50
No. 2 bundles	32.50
Mechanical buddles	28.50
Mixed steel scrap	28.50
Mixed borings, turnings	22.50
Rails, remelting	32.50
Rails, rerolling	41.50
Busheling	26.50
Busheling new factory:	
Prep'd	30.50
Unprep'd	28.50
Short steel turnings	22.50

Cast Iron Grades†

No. 1 machinery cast	46.00

†F.o.b. shipping point.

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CLASSIFIED

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Positions Wanted

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Penton Building — Cleveland 13, O.

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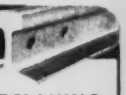

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Look to Pangborn for the latest developments in Blast Cleaning and Dust Control equipment.

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BLAST CLEANS CHEAPER

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Whenever you select a power unit, don't put a straight-jacket on your ideas . . . consider ALL of the possibilities of modern power drives.

For example consider the many useful combinations that can be secured with the basic Master power units shown below. They're designed so they can be easily combined together to give you the RIGHT horsepower, the RIGHT shaft speed, the RIGHT features in one compact unit that you can use RIGHT where you want it. Nowhere else will you find power units that are so flexible, so easily adaptable, and in such a wide range of types and ratings.

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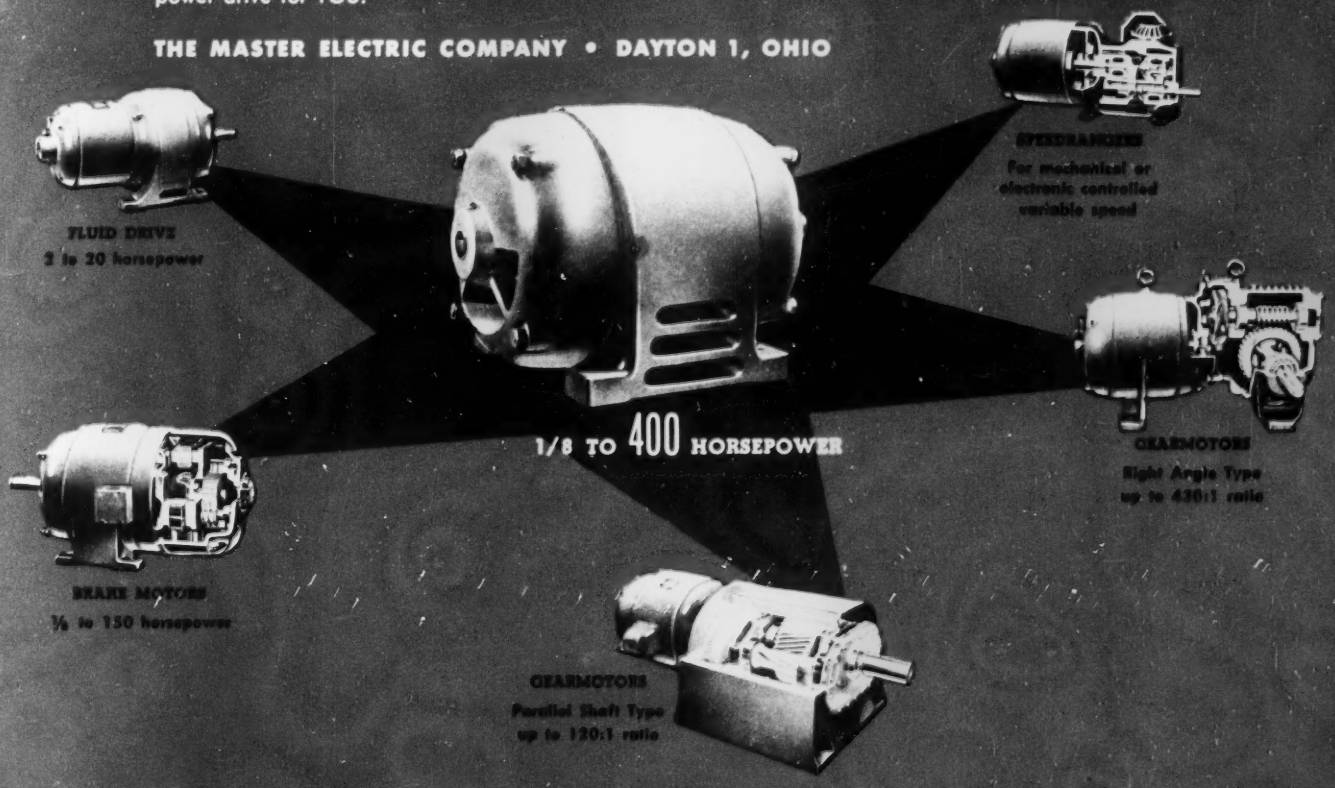
give your brains a chance

THE MASTER ELECTRIC COMPANY • DAYTON 1, OHIO



Rolls out maximum tonnage at minimum bearing cost with TIMKEN® bearings on back-up rolls

ACTUAL cost figures show that Timken® bearing equipped mills —like this 6" x 35" x 30" 4-high mill built by United Engineering and Foundry Company for Allegheny-Ludlum—operate at minimum bearing cost per ton of steel rolled! That's the big reason for using Timken bearings on back-up rolls. And in the mill shown in the picture, Timken bearings are used in the reels and drives, too!

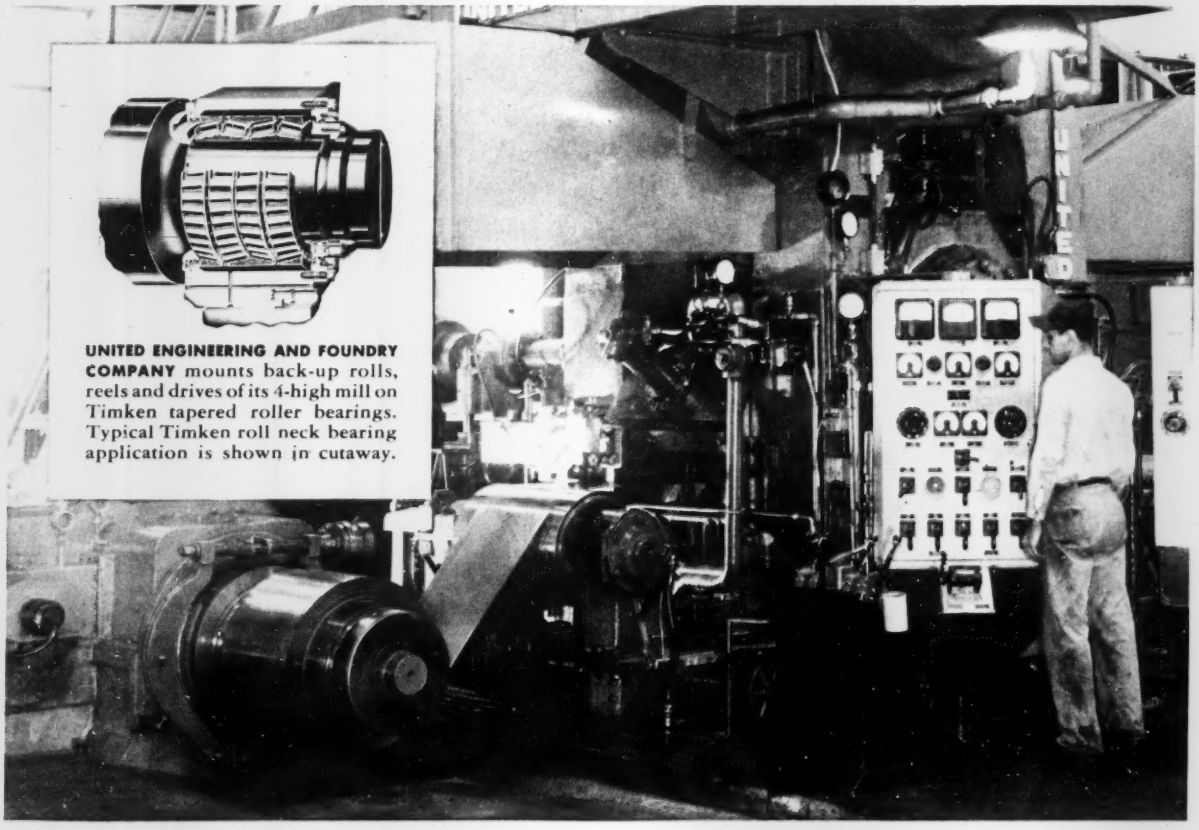
It's been proved that mills operating on Timken bearings have less downtime for maintenance and repair. Timken bearings eliminate complicated lubrication systems. Simple, economical grease lubrication is all that's needed. Roll changes can be made quickly and easily, because there's no elaborate system of pipes and tubing to unhook.

The tapered construction of Timken bearings enables them to take *any* combination of radial and thrust loads. No need for auxiliary bearings to take thrust loads.

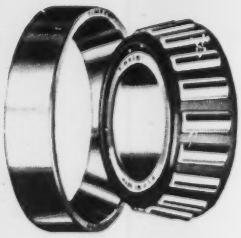
Years of research and development by the Timken Company have resulted in many improvements in roll neck bearing design and performance. For more information about Timken roller bearing applications, write The Timken Roller Bearing Company, Canton 6, Ohio. Cable address: "TIMROSCO".

TIMKEN® BEARING EQUIPPED

This symbol on a product means its bearings are the best.

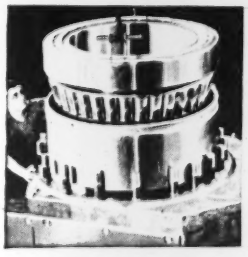


UNITED ENGINEERING AND FOUNDRY COMPANY mounts back-up rolls, reels and drives of its 4-high mill on Timken tapered roller bearings. Typical Timken roll neck bearing application is shown in cutaway.



TIMKEN

TAPERED ROLLER BEARINGS



ROLL NECK BEARING ENGINEERING SERVICE

Our field and service engineers have had years of experience with problems of roll neck bearing design and operation. They'll help you select bearings and design mountings. The Timken Roller Bearing Company is the acknowledged leader in: 1. advanced design; 2. precision manufacture; 3. rigid quality control; 4. special analysis Timken steels.

NOT JUST A BALL NOT JUST A ROLLER THE TIMKEN TAPERED ROLLER BEARING TAKES RADIAL AND THRUST LOADS OR ANY COMBINATION